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CLAIMS

[Claim(s)]

[Claim 1]A variable display device which carries out the variable display of two or more patterns required for a game.

A control means which controls a variable display of this variable display device.

It is the game machine provided with the above, a displaying means which can display arbitrary pictures is provided, a picture displayed on this displaying means is determined in relation to variable display control by said control means, and a display position of this displaying means is set to the variable display position bottom of said variable display device.

[Claim 2]A game machine, wherein said displaying means is arranged in the game machine according to claim 1 under a specific display position of a fluctuation display means controlled so that said variable display device has two or more fluctuation display means which carried out arranging in parallel to a transverse direction and said control means stops at the end.

[Claim 3]A game machine characterized by said specific fluctuation display means being a fluctuation display means arranged in the center of said variable display device in the game machine according to claim 2.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention]This invention relates to the slot machine provided with the control means of the variable display device which carries out the variable display of two or more patterns required for a game, the microcomputer (hereinafter a microcomputer) which controls this variable display, etc., a pachislot, and other game machines.

[0002]

[Description of the Prior Art]For example, the game machine called a slot machine or a pachislot, A variable display device mechanically constituted from carrying out the multiple arrays of the rotation reel which expressed two or more patterns in the front display window, Or it has the variable display device electrically constituted from displaying the pattern on a reel on a screen, According to a game person's start operation, a control means drives a variable display device and rotates each reel, When stopping rotation of each reel one by one by a game person's stopping operation automatically after fixed time, and the pattern of each reel in which it appeared in the display window becomes a specific combination (winning—a-prize pattern), give a game person profits by paying out game media, such as coin, but. That a winning—a-prize pattern gathers on the effective line of a display when a revolving reel stops in a mainstream model now is a case where winning a prize is won in the internal processing of a game machine (when it specifically wins by the lottery by random number extraction with a microcomputer). If the pattern at the time of a stop is determined only by a game person's stopping operation (timing), the result (victory or defeat) of a game will be decided, only a game person's skill will be emphasized, and the soundness of a game will be spoiled by a game person's level of skill, and this. It is for solving the problem that management of the coin expenditure rate from a game machine, etc. becomes difficult also for a game store.

[0003]Although control which stops a variable display in the determination of the pattern displayed at the time of the stop of a variable display and such a pattern is performed by the microcomputer in such a game machine, For the game person, it was difficult to expect what the display mode at the time of a stop becomes, and it was only waiting for the result of a game to come out until it actually turned off the variable display. Then, the game machine with which it compensated the thing insufficient of the game by performing a certain display other than such a game is proposed.

[0004]For example, JP,H8-206328,A has disclosed invention of being able to enjoy that reverberation a certain time, and increasing the probability of hit generating of a game machine even if the great success state of a game machine is completed by hitting and changing a game machine into a state, when generating of a predetermined hit state is interlocked with, the game display for indication which operates is formed and a state occurs in this game display for indication.

[0005]JP,H8-10385,A has disclosed the slot machine which provides a sub display other than the main display which carries out the variable display of two or more patterns, performs control which interrupts the set period in which a game is possible without coin throwing, and performs the game

in a sub display.

[0006]

[Problem to be solved by the invention]However, in the game machine indicated to above-mentioned JP,H8-206328,A, Since the game display for indication formed independently is operated, and the game display for indication does not operate until the result of the game of the game machine itself comes out, time after the hit state of a game machine occurs until the state is completed, and a game machine, About waiting until a result comes out from the start of a game, it is not different from the conventional thing at all.

[0007]Also in a slot machine indicated to JP,H8-10385,A, Since the sub display does not operate while the main display which a game in a sub display is performed into a service time produced after the usual game completion, and performs an original game of a slot machine is operating, there are not the former and a change at a point with monotony of waiting until a result comes out from a start of a game.

[0008]As mentioned above, according to the conventional game machine, even if it established a displaying means other than a variable display device for a game, a game person was only looking at a pattern by which a variable display is carried out from an original game start before an end.

[0009]The purpose of this invention is to give a game person a certain display (another display) from an operation start of a variable display device which displays a pattern required for a game before an end, Monotony until it waits for a result of a game performed with a variable display device is canceled, and it is in providing a game machine which can give another display legible for a game person who is taking notice of a variable display.

[0010]

[Means for solving problem]In a game machine provided with a variable display device which carries out the variable display of two or more patterns which need the 1st mode of this invention for a game, and a control means which controls a variable display of this variable display device, A displaying means which can display arbitrary pictures is provided, a picture displayed on this displaying means is determined in relation to variable display control by a control means, and a display position of this displaying means is set to the variable display position bottom of a variable display device.

[0011]As a displaying means, a mechanical display device of rotation reel structure used on electric display devices, such as a liquid crystal, CRT, and LED, or the conventional slot machine can be used. A display image is distinguished and expressed with various characters, blink of a figure, an animation, or light, etc. which can be expressed with such a display device. As a kind of display image, there are an omen display of "great success", a promotion display which means promotion of "great success", a display which means "great success", a display which means "HAZURE", a display from which "great success" is made to expect, etc., for example, it can store in memory storage of a microcomputer beforehand as data.

[0012]In the 2nd mode, a variable display device has two or more fluctuation display means which carried out arranging in parallel to a transverse direction, and a displaying means is arranged under a specific display position of a fluctuation display means controlled to stop at the end by a control means.

[0013]A variable display device is controlled by the 3rd mode so that a fluctuation display means arranged in the center stops at the end, and in it, a displaying means is arranged under a display position of a fluctuation display means of the center.

[0014]

[Function and Effect]According to the 1st mode, at the time of a game, a control means controls the variable display of a variable display device. And with the pattern displayed at the time of the stop of a variable display, a game result is winning a prize or un-winning a prize (what is called "HAZURE"), and it appears. The variable display control by a control means is controlling a variable display to determine the pattern which should be displayed corresponding to a game result at the

time of the stop of a variable display, and to stop in the pattern. The picture determined in relation to this control is displayed on the displaying means established apart from the variable display device. Thereby, the game person can expect or expect the result of a game during the variable display by a variable display device.

[0015]The picture determined in relation to the above-mentioned variable display control is a display required in order to perform a display as shows the state of the control performed corresponding to the contents (kind of winning a prize, HAZURE, and winning a prize, etc.) of the game result determined by the control means, or the below-mentioned another game. A decision of such a display image is made by a control means. Or when the displaying means itself contains the display control part which determines a display image according to the display command from a control means, it is carried out by the display control part.

[0016]As for a game person, it is desirable for the variable display of a variable display device and another display to go into a game person's field of view almost simultaneous in order also to have to take notice of the variable display of a variable display device, looking at another display by a displaying means. Since the display position of the displaying means is set to the variable display position bottom of a variable display device, the eye line which was looking at the variable display is only moved downward slightly, and the display of a displaying means can be seen. Lower tends to attract a game person's attention, and since motions of an eye line are also few, the game person can also see another display easily, taking notice of a variable display.

[0017]When it comprises a fluctuation display means like two or more rotation reels in which the variable display device carried out arranging in parallel to the transverse direction, When the fluctuation display means controlled to stop at the last among the fluctuation display means of these plurality stops, the specific pattern was displayed and it changes into the state (reach) of becoming a display mode of winning a prize, a game person takes notice of the fluctuation displaying of the fluctuation display means stopped at the end.

[0018]Since the displaying means is arranged under the specific fluctuation display means controlled to stop at the end according to the 2nd mode, it becomes easy to see the display of a displaying means, without a game person turning away his eyes from the fluctuation displaying of the fluctuation display means to observe. Since the display image displayed comes into a game person's field of view easily, a game person can be made to recognize the relation thru/or the correspondence relations between a display image and the stop result of a variable display device.

[0019]The inside of two or more fluctuation display means which carried out arranging in parallel to the transverse direction which forms a variable display device according to the 3rd mode, Since the displaying means is arranged under the fluctuation display means which is controlled so that the fluctuation display means located in the center stops at the end, and is located in the center, Though it obtained with the game person's eye lines and has swerved to right and left when even after displayed the pattern in which fluctuation displaying was specific and it is in the reach condition used as the display mode of winning a prize, the display image located in the center goes into a game person's view easily, and tends to attract attention. For a game person, it is legible that the display which it should take notice of is located in the center, and in order not to require movement of an excessive eye line, it leads also to fatigue reduction.

[0020]

[Mode for carrying out the invention]Drawing 1 is a perspective view showing the appearance of the slot machine of one embodiment of this invention. Although this slot machine 1 is a game machine which plays a game using coin, a medal, or a token as a game medium, below, it is explained as what uses a medal.

[0021]The three display windows 3L horizontally located in a line, 3C, and 3R are provided in the transverse plane of the cabinet 2 which forms the whole slot machine 1, and various patterns are displayed on the winning line 14 of the center of each display window, or the position of the upper and lower sides (refer to drawing 6). These patterns are drawn on the surface of the sheet which

forms the circumference surface of the display window 3L, 3C, and the three rotation reels 4L, 4C, and 4R arranged inside the cabinet 2 corresponding to 3R. The variable display device is constituted by these rotation reels. The start lever 5 for rotating the above-mentioned reel by a game person's operation is attached to the lateral portion of the cabinet 2 in the predetermined angle range, enabling free rotation. In the center of a lower part of the display window of the front part of the cabinet 2, the liquid crystal display 6 as an example of the displaying means in this invention is arranged. The display image is explained in detail later.

[0022]By push button operation of 8 or 1 spin switch for putting said reel into operation by push button operation down the liquid crystal driving circuit 6 apart from operation of the medal slot 7 into which the medal of a game medium is put, and the above-mentioned start lever 5. Among the medals by which the credit is carried out, only one sheet. The maximum BET switch 10 for betting the medal of the maximum number of sheets which can be risked on the game of 9 or 1 1-BET switch for risking on a game, and the C/P switch 11 which switches the credit/expenditure of the medal which the game person won by push button operation are arranged. The medal holder part 13 grade which collects the medal paid out of the medal expenditure mouth 12 of the lower part of a transverse plane by the change of the C/P switch 11 in the lower part of the transverse plane of the cabinet 2 is arranged.

[0023]Drawing 2 shows the circuitry containing the control section which controls the game processing operation in the slot machine 1, and the peripheral equipment (actuator) electrically connected to this.

[0024]In this case, a control means makes the microcomputer 20 a main component, adds the circuit for a random number sampling to this, and is constituted. CPU21 which performs a control action according to the program to which the microcomputer 20 was set beforehand, The clock pulse generating circuits 24 and the counting-down circuit 25 which generate a reference clock pulse in CPU21, the random number generator 26 which generates the random number sampled, and the random number sampling circuit 27 are connected including ROM22 and RAM23 which are memory measures. As a means for a random number sampling, it may constitute so that a random number sampling may be performed within the microcomputer 20 (i.e., on the operation program of CPU21). In that case, it is also possible to be able to omit the random number generator 26 and the random number sampling circuit 27, or to leave as an object for backup of a random number sampling action.

[0025]Information and data required in order to perform processing which displays two or more display images of the after-mentioned besides the game control of a slot machine on the screen of the liquid crystal display 6 are stored in ROM22 of the microcomputer 20.

[0026]In the circuit of drawing 2, as main actuators by which operation is controlled by the control signal from the microcomputer 20, The stepping motors 15L, 15C, and 15R which rotate said reels 4L, 4C, and 4R, respectively. There are the hopper (the actuator for expenditure is included) 30 which stores the medal of a game medium, and the above-mentioned display screen, and it is connected to the outgoing end of CPU21 via the motor drive circuit 31, the hopper drive circuit 32, and the liquid crystal driving circuit 16, respectively. These drive circuits control operation of each actuator in response to control signals, such as a driving command outputted from CPU21.

[0027]As main input signal generating means which generate an input signal required since the microcomputer 20 generates a control signal, The medal sensor 7S which detects the medal thrown into the medal slot 7, the start switch 5S which detects operation of the start lever 5, a maximum of [the spin switch 8, the 1-BET switch 9, and] — the reel position detecting circuit 34 which supplies the signal for detecting the position of each reel in response to the pulse signal from the reel rotation detection circuit of the BET switch 10, the C/P switch 11, and a variable display device to CPU21 — and, When the number-of-sheets data in which the enumerated data of the medal primary detecting element 35 which detects the medal paid out of the hopper 30 were specified is reached, the expenditure completion signal circuit 36 which supplies the signal for

detecting the completion of medal expenditure to CPU21 is connected to the input edge of CPU21. [0028] In the circuit of drawing 2, the random number generator 26 generates the random number belonging to a predetermined numeric value range, and the sampling circuit 27 samples one random number to suitable timing, after the start lever 5 is operated. In this way, the sampled random number will generate a "winning-a-prize request signal", if it is judged whether it belongs to the prize area which is stored in the storage parts store in ROM22 and which was appointed beforehand and it belongs to the prize area.

[0029] After rotation of the reels 4L, 4C, and 4R is started, the number of the drive pulses supplied to each of the stepping motors 15L, 15C, and 15R is calculated, and the enumerated data are written in the prescribed area of RAM23. A reset pulse is obtained from the reels 4L, 4C, and 4R for every one revolution, and these pulses are inputted into CPU21 via the reel position detecting circuit 35. CPU21 clears to "0" the drive pulse enumerated data stored in RAM23 by the reset pulse obtained in this way. Thereby, in RAM23, the enumerated data corresponding to the rotary place of the one revolution within the limits are stored about each reels 4L, 4C, and 4R.

[0030] Since the rotary place and pattern of the above reels 4L, 4C, and 4R are matched, the pattern table is stored in ROM22. On this winning-a-prize pattern combination table, the combination of the pattern which is winning a prize, the medal dividend number of sheets of winning a prize, and the winning-a-prize determination code showing that winning a prize are matched. A winning-a-prize pattern combination table is referred to, while controlling the reels 4L, 4C, and 4R, and when performing the winning-a-prize check after all the reel stops.

[0031] A program for performing processing as which the below-mentioned "routine pattern" is displayed on the liquid crystal display 6 before generating of the above "winning-a-prize request signal", and after generating of a "winning-a-prize request signal" displays a "presentation pattern" on ROM22. The data in which the standard for choosing two or more display image data containing a routine pattern and a presentation pattern and the picture which should be displayed out of these, etc. are shown is stored.

[0032] Drawing 3 shows the procedure of the operation which controls the display of the liquid crystal display 6. Although this processing is performed by CPU21 of the microcomputer 20 which is a game control means of the slot machine 1, When CPU as a display control part is given to the displaying means like the liquid crystal display 6 itself, it may be made for the CPU to determine a display image according to the display command (for example, display command corresponding to the kind or HAZURE of winning a prize) from CPU21 as a game control means.

[0033] In drawing 3, if the power supply of a game machine (slot machine 1) is come on by first (step ST1), CPU as a control means will display a "routine pattern" on the screen of the display screen 6 (ST2). If a game person does predetermined operation here (i.e., if the start lever 5 or the spin switch 8 is operated after throwing a medal into the medal slot 7 and operating the 1-BET switch 9 or the maximum BET switch 10), the reels 4L, 4C, and 4R will rotate, and a variable display will be started (ST3). At this time, it judges winning a prize / un-winning a prize based on the random number extracted by random number sampling (ST4). And it judges whether the "winning-a-prize request signal" occurred (ST5), and a display image is determined according to the decided result. That is, if the "winning-a-prize request signal" has not occurred, a specific presentation pattern is chosen out of the presentation pattern group for "HAZURE" (ST6). When a "winning-a-prize request signal" occurs, it is judged whether the "winning-a-prize request signal" corresponds to "great success" (ST7), if it is "NO" — "a small hit" — "a small hit" specific out of the presentation pattern group of business — if the presentation pattern of business is chosen (ST8) and it is "YES" — "great success" — "great success" specific out of the presentation pattern group of business — the presentation pattern of business is chosen (ST9). Here, each above-mentioned presentation pattern group ("HAZURE" the presentation pattern group of business, "hit" the presentation pattern group of business, "great success" presentation pattern group of business)

is formed with two or more presentation patterns, respectively, and is stored in ROM22. And the pattern selected in this way is displayed on the liquid crystal display 6 (ST10), and about the reels 4L, 4C, and 4R under rotation, stop control according to a winning-a-prize request signal is performed (ST11), and it ends.

[0034]In the above-mentioned processing, the variable display of ST3 is realized, when CPU21 sends a driving signal to the motor drive circuit 31, drives the stepping motors 15L, 15C, and 15R and rotates the reels 4L, 4C, and 4R. The winning-a-prize judging of ST4 is realized by judging to which group the value of the random number which sampled the random number and was extracted from the random number generator 26 to proper timing belongs with said prize probability tables. And when judged with winning a prize, CPU21 sends the signal which carries out stop control of the reels 4L, 4C, and 4R to the pattern display position corresponding to the kind of winning a prize to the motor drive circuit 31. Thereby, stop control of ST11 is realized.

[0035]CPU21 performs simultaneously operation which sends the reel halt control signal based on the above-mentioned winning-a-prize judging to the motor drive circuit 31, and operation which sends the pattern display signal based on selection of the "presentation pattern" which displays a screen on the liquid crystal display 6 to the liquid crystal driving circuit 16. Therefore, while stop control of the rotation reel is carried out, a presentation pattern is displayed on the screen of the liquid crystal display 6. A "presentation pattern" is explained in detail later.

[0036]When it judges with winning a prize, CPU21 supplies the medal expenditure command signal corresponding to the kind of winning a prize to the hopper drive circuit 32, and pays the medal of a prescribed number out of the hopper 30. The number of sheets of the medal which the medal primary detecting element 35 pays out of the hopper 30 in that case is calculated, when the number-of-sheets data in which the enumerated data were specified is reached, the expenditure completion signal circuit 36 pays out CPU21, and a completion signal is inputted. Thereby, CPU21 suspends the drive of the hopper 30 via the hopper drive circuit 32, and ends expenditure processing of a medal.

[0037]As mentioned above, in the slot machine 1 of an embodiment, CPU as a control means judges generating of a "winning-a-prize request signal". The pattern of "great success" beforehand provided in the winning line according to the result or "a small hit" performs stop control of the reels 4L, 4C, and 4R so that the pattern of "HAZURE" may be located in a line, and. The display of the liquid crystal display 6 is controlled to display the presentation pattern in which a game person can expect "great success", "a small hit", or generating of "HAZURE".

[0038]On the other hand, when liquid crystal display 6 the very thing is provided with CPU as a display control part, CPU21 as a game control means sends the instructions for which a game person displays on the liquid crystal display 6 the presentation pattern which can expect "great success", "a small hit", or generating of "HAZURE" to CPU of the liquid crystal display 6, when performing the above-mentioned reel stop control. According to this, CPU of the liquid crystal display 6 determines a display image, and displays it on a screen.

[0039]Next, an example is given and explained about the "routine pattern" and the "presentation pattern" which are displayed on the display screen of the liquid crystal display 6.

[0040]Drawing 4 shows the example of the display image of the display window 3L before the reels 4L, 4C, and 4R rotate, 3C, the displaying condition in 3R, and the liquid crystal display 6. Here, the "title of the game" of an example of a routine pattern is displayed on the liquid crystal display 6. As other routine patterns, there is a display of "explanation of a game", "explanation in case reach occurs", etc., etc. When a routine pattern has two or more of these pictures, it may display one by one with a predetermined time interval.

[0041]Drawing 5 – drawing 8 show the example of the "presentation pattern" displayed on the liquid crystal display 6 one by one. In the liquid crystal display 6, "the cowboy over a horse" as shows drawing 5 appears at the same time the reels 4L, 4C, and 4R start rotation.

[0042]Here, the color of a background may be changed immediately after the rotation start of the

reels 4L, 4C, and 4R, without erasing the routine pattern of the liquid crystal display 6, and the production showing the start of a game may be made.

[0043]It may be made to display no pictures on predetermined time until it starts the display of a presentation pattern to the liquid crystal display 6, and the liquid crystal display 6 after the rotation start of the reels 4L, 4C, and 4R. In this case, it is useful as production which heightens the feeling of tension which faces the start of a game.

[0044]Then, the winning-a-prize pattern in which rotation of the reels 4L and 4R on either side stops in which the display in a display window is right and left specific as shown in drawing 6 (in drawing 6.) When it changes into the state (reach) where the "WILD RODEO" pattern gathered, the display image of the liquid crystal display 6 becomes the display in the state "where a cowboy riots and it is fighting with the horse."

[0045]Then, as shown in drawing 7, when a display when a central reel stops will not be a specific winning-a-prize pattern (put together), the display image of the liquid crystal display 6 will be in the state "where the cowboy was shaken off from the horse", and a game person will miss winning a prize.

[0046]The winning-a-prize pattern in which a display as shown in drawing 8 on the other hand, when all the reels stop is specific (in drawing 8.) When gathered by three "WILD RODEO" patterns, the display image of the liquid crystal display 6 becomes the display in the state "where a victorious pose is made from the state where the cowboy rode on the horse", and a game person gains the profits corresponding to the winning a prize.

[0047]By displaying the above-mentioned presentation pattern on the screen of the liquid crystal display 6 as an animation, a game person senses that a cowboy rioting and not being shaken off from a horse leads to winning a prize. Therefore, if the screen of the liquid crystal display 6 is seen, it hopes a cowboy riots and it is not shaken off from a horse and a cowboy is finally shaken off, a game person will sense that winning a prize was missed, until all the reels stop. In this way, since a game person performs a game, doubling the presentation pattern which appears on the screen of the liquid crystal display 6, and the expectation for one's game result, and becoming it tense, the monotony of the conventional game is canceled.

[0048]As shown in drawing 4 – drawing 8, the liquid crystal display 6 is formed under the central reel 4C. Therefore, as shown in drawing 6, rotation of the reels 4L and 4R on either side stops, After being in the state (reach) where the "WILD RODEO" pattern which is a winning-a-prize pattern in which the display in a display window is right and left specific gathered, a game person, The display image of the liquid crystal display 6 in the bottom of it can be seen simultaneously, without what is necessary's being to observe only the display of the reel 4C of the center the variable display continues, and moving an eye line to right and left, since the stopped pattern on either side is already recognized. Since concentration to the end of a game person's game is not reduced, and a motion of an eye line is also very small and ends by this, fatigue does not increase. Since it is easier to move an eye line caudad for the game person who takes notice of the display in a display window rather than moving an eye line up, it is easy to attract attention of a display image. A game person takes notice of the display of the central reel 4C, watching the screen of the liquid crystal display 6 hoping at the time of reach, a cowboy riots and it is not shaken off from a horse, When the central reel 4C stops after that, Since the picture corresponding to the game result which a display window displays, and this game result jumps into a field of view simultaneously from the central reel 4C and the liquid crystal display 6 located in the bottom of it, the correspondence relations or sense of togetherness of the game result of a display window and the display image of the liquid crystal display 6 can be directed.

[0049]After rotation of a reel stops, as a service game or a bonus game, When giving the opportunity of the game which does not need an injection or consumption of a medal for a game person, a picture as shown in drawing 4 is displayed on the screen of the liquid crystal display 6 as an omen which tells the start of such a game, and it may be made to display the animation following this till

the end of the game concerned. If such an omen display is carried out, a game person will expect the start of a service game or a bonus game with the display image of the liquid crystal display 6, and will become the feeling which it gained.

[0050]Although the above-mentioned embodiment is provided with the liquid crystal display as a displaying means, The mechanical display device suspended and displayed with the arbitrary pictures in two or more pictures like the electric display device which arranged many dot display machines, such as a graphic display device like CRT and LED, instead of or rotation reel structure can also perform the same production as the display image of the above-mentioned embodiment. [a liquid crystal display] The display image which makes a game position favorable for a game person or a dangerous state recognize may be realized by the abstract display (for example, blink of a lamp) of those other than a character or a picture.

[0051]Although he is trying to display the control state of the variable display corresponding to the result of the original game on the liquid crystal display 6, it may be made to display the picture which can do another game with the liquid crystal display 6 in the above-mentioned embodiment. In that case, the data and the execution program of a display image for another game are stored in ROM22 of the microcomputer 20. And CPU21 performs processing shown in drawing 9 and drawing 10.

[0052]In drawing 9, if the power supply of a game machine is come on by first (ST21), CPU as a control means will display a "routine pattern" on the liquid crystal display 6 (ST22). If a game person does predetermined operation here (i.e., if the start lever 5 or the spin switch 8 is operated after throwing a medal into the medal slot 7 and operating the 1-BET switch 9 or the maximum BET switch 10), The reels 4L, 4C, and 4R rotate, and a variable display is started (ST23). At this time, it judges winning a prize / un-winning a prize based on the random number extracted by random number sampling (ST24). And the point of judging whether the "winning-a-prize request signal" having occurred (ST25), and determining the display mode of winning a prize or not winning a prize, according to the decided result is the same as that of processing of drawing 3.

[0053]However, in processing of drawing 9, the display image of the liquid crystal display 6 is a pattern which can perform two or more games as another game. Namely, if the "winning-a-prize request signal" has not occurred in the judgment of above-mentioned ST25, CPU, "Game 1" when the pattern of business is chosen (ST26) and a "winning-a-prize request signal" occurs, if it judges whether a "winning-a-prize request signal" corresponds to "great success" (ST27) and is "NO" — "the game 2" — if the pattern of business is chosen (ST28) and it is "YES" — "the game 3" — the pattern of business is chosen (ST29). As "the game 1", the "game 2", and the "game 3", although the pattern which appears in the display 6 is the same, things different, respectively, such as a game from which winning-a-prize probability differs, or a game from which the appearing pattern and winning-a-prize probability differ, are set up beforehand.

[0054]Next, it is judged whether the conditions which start the game selected as mentioned above were ready (ST30). As a start condition, arbitrary things, such as a stop of one reel, a stop of two reels, a stop of all the reels, and specified time elapse, are defined beforehand, for example. When a start condition is except "a stop of all the reels", the game by the display of the liquid crystal display 6 will be started during rotation of a reel, and an original game and another game in the liquid crystal display 6 will be performed simultaneously.

[0055]When a start condition is ready in the above-mentioned judgment, as shown in drawing 10, processing for displaying the selected pattern for games on the screen of the liquid crystal display 6 is performed (ST31), and the game by it is performed. And the winning-a-prize judging of this game is performed (ST32). Although the judgment of winning a prize by random number sampling or not winning a prize, and the judgment of the kind of winning a prize may be sufficient as this winning-a-prize judging like an original game, it may prepare a winning-a-prize judging special for this game.

[0056]Winning processing is performed when judged with winning a prize (ST33), or [that this displays a specific winning-a-prize mode on the liquid crystal display 6, and also is the same as

processing when the specified pattern of the reels 4L, 4C, and 4R is equal to the winning line 14 as mentioned above] — or any of the processing separately determined as it may be sufficient. On the other hand, when judged with un-winning a prize, non-winning processing is performed (ST34). That is, the specific mode not winning a prize is displayed on the liquid crystal display 6. Then, about the reels 4L, 4C, and 4R under rotation, stop control is performed (ST35) and it ends.

[0057]Drawing 11 shows the example of the display image of another game performed with the liquid crystal display 6 in relation to the game by the reels 4L, 4C, and 4R. In this example, the picture of the three move symbol trains 6L, 6C, and 6R which perform the variable display of two or more kinds of patterns like the three reels 4L, 4C, and 4R which perform the variable display of an original game is displayed on the screen of the liquid crystal display 6.

[0058]Another game of this example is a case of the "bonus game" started when it gathers in a winning—a-prize mode with a specific pattern located in a line along the winning line 14 when rotation of the reels 4L, 4C, and 4R stopped. At this time, the medal of a specified number pays out a game person as profits beforehand defined corresponding to the mode of that winning a prize. And when the variable display of the three symbol trains 6L, 6C, and 6R is carried out to the screen of the liquid crystal display 6 by the start of a "bonus game" and they carry out specified time elapse to it by it, movement of each symbol trains 6L, 6C, and 6R stops. If a specific symbol "DOUBLE" is located on center line 14' at this time, the medal of a specified number will pay out a game person again. Therefore, the opportunity for the profits gained by winning a prize of an original game to double by a "bonus game" is given to a game person.

[0059]In the case of the [the "lottery game"] started when it gathers in a winning—a-prize mode with a specific pattern located in a line along the winning line 14 as other examples of another game when rotation of the reels 4L, 4C, and 4R stopped, The symbol (number) located on center line 14' when the three symbol trains 6L, 6C, and 6R which carry out a variable display to the above-mentioned "bonus game" said appearance on the screen of the liquid crystal display 6 stop without defining distribution of profits beforehand corresponding to the winning—a-prize mode expresses distribution of profits, The medal of a specified number pays out by the distribution of profits for which it opted.

[0060]Although the display image for the display of a variable—display—control state of an original game or another game is displayed on the liquid crystal display 6 of an example of the displaying means in this invention as above, Besides these displays, the picture which shows the generating frequency or the incidence rate of winning a prize or HAZURE in the history of the past game result, i.e., the already digested game, may be displayed. At for this reason, the times which provide a display switching button in the place (for example, the side side of the liquid crystal display 6) where the transverse plane of the slot machine of drawing 1 is suitable that it is arbitrary in a game. If a game person pushes this, the screen of the liquid crystal display 6 will be changed to winning a prize, or the generating frequency of HAZURE or the display of an incidence rate, and when a game person pushes a button again, it is made to return to a front screen. By the above-mentioned history display, the game person can judge whether it is a stand out of which a hit of the game machine which is going to begin a game tends to come.

[0061]As a picture which shows such a game history, for example winning a prize after a game start, or the survival rate (for example, winning a prize assumed to generate in 10,000 times of games or % of the number of times of HAZURE) of HAZURE, Digital display can be carried out in a number as carried out an analog display with a bar graph as shown in drawing 12 and drawing 13, and a pie chart as shown in drawing 14 or shown in drawing 15. The operation for these displays is performed by the microcomputer of the slot machine 1, or CPU (in a certain case) of liquid crystal display 6 the very thing.

[0062]As a pattern (symbol) which constitutes the pattern combination of winning a prize from an example of drawing 12, in detail "7", "BAR", a "bell" (figure), A "cherry" (figure) is shown and each survival rate is displayed on the screen of the liquid crystal display 6 about these patterns and other

patterns (symbol used as "HAZURE"). As a pattern "7" is shown in drawing 13 as an example, the bar graph showing the survival rate (%) for every pattern at the power up of the slot machine 1, or the time of reset, lighting or the portion displayed brightly — 100% of state — it is (drawing 13 A). While the game is repeated, whenever the state where the pattern combination at the time of a stop of the three rotation reels 4L, 4C, and 4R serves as great success of "7-7-7" arises, lighting or a bright portion decreases 10% respectively (drawing 13 B-D), lighting or the highlighted part which expresses the survival rate (%) for every pattern also with the pie chart of drawing 14 — great success — producing — whenever — decreasing . The same can be said for other patterns. In the digital display of drawing 15, the number which expresses a survival rate (%) for every pattern changes.

[0063]Arrangement of the liquid crystal display 6 of an example of a displaying means may provide in the display window 3L, 3C, the bottom whole region of 3R, the right-hand side left-hand side display window 3L or display window 3R bottom, etc., as shown, for example in drawing 16 not only in the display window 3C bottom like drawing 1.

[0064]It may be a game machine possessing the variable display device with which three or more patterns are displayed on each display window, and two or more winning lines become effective under predetermined conditions.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention]This invention relates to the slot machine provided with the control means of the variable display device which carries out the variable display of two or more patterns required for a game, the microcomputer (henceforth a microcomputer) which controls this variable display, etc., a pachislot, and other game machines.

[Translation done.]

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PRIOR ART

[Description of the Prior Art]For example, the game machine called a slot machine or a pachislot, A variable display device mechanically constituted from carrying out the multiple arrays of the rotation reel which expressed two or more patterns in the front display window, Or it has the variable display device electrically constituted from displaying the pattern on a reel on a screen, According to a game person's start operation, a control means drives a variable display device and rotates each reel, When stopping rotation of each reel one by one by a game person's stopping operation automatically after fixed time, and the pattern of each reel in which it appeared in the display window becomes a specific combination (winning—a-prize pattern), give a game person profits by paying out game media, such as coin, but. That a winning—a-prize pattern gathers on the effective line of a display when a revolving reel stops in a mainstream model now is a case where winning a prize is won in the internal processing of a game machine (when it specifically wins by the lottery by random number extraction with a microcomputer). If the pattern at the time of a stop is determined only by a game person's stopping operation (timing), the result (victory or defeat) of a game will be decided, only a game person's skill will be emphasized, and the soundness of a game will be spoiled by a game person's level of skill, and this. It is for solving the problem that management of the coin expenditure rate from a game machine, etc. becomes difficult also for a game store.

[0003]Although control which stops a variable display in the determination of the pattern displayed at the time of the stop of a variable display and such a pattern is performed by the microcomputer in such a game machine, For the game person, it was difficult to expect what the display mode at the time of a stop becomes, and it was only waiting for the result of a game to come out until it actually turned off the variable display. Then, the game machine with which it compensated the thing insufficient of the game by performing a certain display other than such a game is proposed.

[0004]For example, JP,H8-206328,A has disclosed invention of being able to enjoy that reverberation a certain time, and increasing the probability of hit generating of a game machine even if the great success state of a game machine is completed by hitting and changing a game machine into a state, when generating of a predetermined hit state is interlocked with, the game display for indication which operates is formed and a state occurs in this game display for indication.

[0005]JP,H8-10385,A has disclosed the slot machine which provides a sub display other than the main display which carries out the variable display of two or more patterns, performs control which interrupts the set period in which a game is possible without coin throwing, and performs the game in a sub display.

[Translation done.]

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EFFECT OF THE INVENTION

[Function and Effect]According to the 1st mode, at the time of a game, a control means controls the variable display of a variable display device. And with the pattern displayed at the time of the stop of a variable display, a game result is winning a prize or un-winning a prize (what is called "HAZURE"), and it appears. The variable display control by a control means is controlling a variable display to determine the pattern which should be displayed corresponding to a game result at the time of the stop of a variable display, and to stop in the pattern. The picture determined in relation to this control is displayed on the displaying means established apart from the variable display device. Thereby, the game person can expect or expect the result of a game during the variable display by a variable display device.

[0015]The picture determined in relation to the above-mentioned variable display control is a display required in order to perform a display as shows the state of the control performed corresponding to the contents (kind of winning a prize, HAZURE, and winning a prize, etc.) of the game result determined by the control means, or the below-mentioned another game. A decision of such a display image is made by a control means. Or when the displaying means itself contains the display control part which determines a display image according to the display command from a control means, it is carried out by the display control part.

[0016]As for a game person, it is desirable for the variable display of a variable display device and another display to go into a game person's field of view almost simultaneous in order also to have to take notice of the variable display of a variable display device, looking at another display by a displaying means. Since the display position of the displaying means is set to the variable display position bottom of a variable display device, the eye line which was looking at the variable display is only moved downward slightly, and the display of a displaying means can be seen. Lower tends to attract a game person's attention, and since motions of an eye line are also few, the game person can also see another display easily, taking notice of a variable display.

[0017]When it comprises a fluctuation display means like two or more rotation reels in which the variable display device carried out arranging in parallel to the transverse direction, When the fluctuation display means controlled to stop at the last among the fluctuation display means of these plurality stops, the specific pattern was displayed and it changes into the state (reach) of becoming a display mode of winning a prize, a game person takes notice of the fluctuation displaying of the fluctuation display means stopped at the end.

[0018]Since the displaying means is arranged under the specific fluctuation display means controlled to stop at the end according to the 2nd mode, it becomes easy to see the display of a displaying means, without a game person turning away his eyes from the fluctuation displaying of the fluctuation display means to observe. Since the display image displayed comes into a game person's field of view easily, a game person can be made to recognize the relation thru/or the correspondence relations between a display image and the stop result of a variable display device.

[0019]The inside of two or more fluctuation display means which carried out arranging in parallel to

the transverse direction which forms a variable display device according to the 3rd mode. Since the displaying means is arranged under the fluctuation display means which is controlled so that the fluctuation display means located in the center stops at the end, and is located in the center. Though it obtained with the game person's eye lines and has swerved to right and left when even after displayed the pattern in which fluctuation displaying was specific and it is in the reach condition used as the display mode of winning a prize, the display image located in the center goes into a game person's view easily, and tends to attract attention. For a game person, it is legible that the display which it should take notice of is located in the center, and in order not to require movement of an excessive eye line, it leads also to fatigue reduction.

[0020]

[Mode for carrying out the invention]Drawing 1 is a perspective view showing the appearance of the slot machine of one embodiment of this invention. Although this slot machine 1 is a game machine which plays a game using coin, a medal, or a token as a game medium, below, it is explained as what uses a medal.

[0021]The three display windows 3L horizontally located in a line, 3C, and 3R are provided in the transverse plane of the cabinet 2 which forms the whole slot machine 1, and various patterns are displayed on the winning line 14 of the center of each display window, or the position of the upper and lower sides (refer to drawing 6). These patterns are drawn on the surface of the sheet which forms the circumference surface of the display window 3L, 3C, and the three rotation reels 4L, 4C, and 4R arranged inside the cabinet 2 corresponding to 3R. The variable display device is constituted by these rotation reels. The start lever 5 for rotating the above-mentioned reel by a game person's operation is attached to the lateral portion of the cabinet 2 in the predetermined angle range, enabling free rotation. In the center of a lower part of the display window of the front part of the cabinet 2, the liquid crystal display 6 as an example of the displaying means in this invention is arranged. The display image is explained in detail later.

[0022]By push button operation of 8 or 1 spin switch for putting said reel into operation by push button operation down the liquid crystal driving circuit 6 apart from operation of the medal slot 7 into which the medal of a game medium is put, and the above-mentioned start lever 5. Among the medals by which the credit is carried out, only one sheet. The maximum BET switch 10 for betting the medal of the maximum number of sheets which can be risked on the game of 9 or 1 1-BET switch for risking on a game, and the C/P switch 11 which switches the credit/expenditure of the medal which the game person won by push button operation are arranged. The medal holder part 13 grade which collects the medal paid out of the medal expenditure mouth 12 of the lower part of a transverse plane by the change of the C/P switch 11 in the lower part of the transverse plane of the cabinet 2 is arranged.

[0023]Drawing 2 shows the circuitry containing the control section which controls the game processing operation in the slot machine 1, and the peripheral equipment (actuator) electrically connected to this.

[0024]In this case, a control means makes the microcomputer 20 a main component, adds the circuit for a random number sampling to this, and is constituted. CPU21 which performs a control action according to the program to which the microcomputer 20 was set beforehand. The clock pulse generating circuits 24 and the counting-down circuit 25 which generate a reference clock pulse in CPU21, the random number generator 26 which generates the random number sampled, and the random number sampling circuit 27 are connected including ROM22 and RAM23 which are memory measures. As a means for a random number sampling, it may constitute so that a random number sampling may be performed within the microcomputer 20 (i.e., on the operation program of CPU21). In that case, it is also possible to be able to omit the random number generator 26 and the random number sampling circuit 27, or to leave as an object for backup of a random number sampling action.

[0025]Information and data required in order to perform processing which displays two or more

display images of the after-mentioned besides the game control of a slot machine on the screen of the liquid crystal display 6 are stored in ROM22 of the microcomputer 20.

[0026]In the circuit of drawing 2, as main actuators by which operation is controlled by the control signal from the microcomputer 20, The stepping motors 15L, 15C, and 15R which rotate said reels 4L, 4C, and 4R, respectively, There are the hopper (the actuator for expenditure is included) 30 which stores the medal of a game medium, and the above-mentioned display screen, and it is connected to the outgoing end of CPU21 via the motor drive circuit 31, the hopper drive circuit 32, and the liquid crystal driving circuit 16, respectively. These drive circuits control operation of each actuator in response to control signals, such as a driving command outputted from CPU21.

[0027]As main input signal generating means which generate an input signal required since the microcomputer 20 generates a control signal, The medal sensor 7S which detects the medal thrown into the medal slot 7, the start switch 5S which detects operation of the start lever 5, a maximum of [the spin switch 8, the 1-BET switch 9, and] — the reel position detecting circuit 34 which supplies the signal for detecting the position of each reel in response to the pulse signal from the reel rotation detection circuit of the BET switch 10, the C/P switch 11, and a variable display device to CPU21 — and, When the number-of-sheets data in which the enumerated data of the medal primary detecting element 35 which detects the medal paid out of the hopper 30 were specified is reached, the expenditure completion signal circuit 36 which supplies the signal for detecting the completion of medal expenditure to CPU21 is connected to the input edge of CPU21.

[0028]In the circuit of drawing 2, the random number generator 26 generates the random number belonging to a predetermined numeric value range, and the sampling circuit 27 samples one random number to suitable timing, after the start lever 5 is operated. In this way, the sampled random number will generate a "winning-a-prize request signal", if it is judged whether it belongs to the prize area which is stored in the storage parts store in ROM22 and which was appointed beforehand and it belongs to the prize area.

[0029]After rotation of the reels 4L, 4C, and 4R is started, the number of the drive pulses supplied to each of the stepping motors 15L, 15C, and 15R is calculated, and the enumerated data are written in the prescribed area of RAM23. A reset pulse is obtained from the reels 4L, 4C, and 4R for every one revolution, and these pulses are inputted into CPU21 via the reel position detecting circuit 35. CPU21 clears to "0" the drive pulse enumerated data stored in RAM23 by the reset pulse obtained in this way. Thereby, in RAM23, the enumerated data corresponding to the rotary place of the one revolution within the limits are stored about each reels 4L, 4C, and 4R.

[0030]Since the rotary place and pattern of the above reels 4L, 4C, and 4R are matched, the pattern table is stored in ROM22. The winning-a-prize pattern combination table is stored in ROM22. On this winning-a-prize pattern combination table, the combination of the pattern which is winning a prize, the medal dividend number of sheets of winning a prize, and the winning-a-prize determination code showing that winning a prize are matched. A winning-a-prize pattern combination table is referred to, while controlling the reels 4L, 4C, and 4R, and when performing the winning-a-prize check after all the reel stops.

[0031]A program for performing processing as which the below-mentioned "routine pattern" is displayed on the liquid crystal display 6 before generating of the above "winning-a-prize request signal", and after generating of a "winning-a-prize request signal" displays a "presentation pattern" on ROM22, The data in which the standard for choosing two or more display image data containing a routine pattern and a presentation pattern and the picture which should be displayed out of these, etc. are shown is stored.

[0032]Drawing 3 shows the procedure of the operation which controls the display of the liquid crystal display 6. Although this processing is performed by CPU21 of the microcomputer 20 which is a game control means of the slot machine 1, When CPU as a display control part is given to the displaying means like the liquid crystal display 6 itself, it may be made for the CPU to determine a display image according to the display command (for example, display command corresponding to

the kind or HAZURE of winning a prize) from CPU21 as a game control means.

[0033]In drawing 3, if the power supply of a game machine (slot machine 1) is come on by first (step ST1), CPU as a control means will display a "routine pattern" on the screen of the display screen 6 (ST2). If a game person does predetermined operation here (i.e., if the start lever 5 or the spin switch 8 is operated after throwing a medal into the medal slot 7 and operating the 1-BET switch 9 or the maximum BET switch 10), the reels 4L, 4C, and 4R will rotate, and a variable display will be started (ST3). At this time, it judges winning a prize / un-winning a prize based on the random number extracted by random number sampling (ST4). And it judges whether the "winning-a-prize request signal" occurred (ST5), and a display image is determined according to the decided result. That is, if the "winning-a-prize request signal" has not occurred, a specific presentation pattern is chosen out of the presentation pattern group for "HAZURE" (ST6). When a "winning-a-prize request signal" occurs, it is judged whether the "winning-a-prize request signal" corresponds to "great success" (ST7), if it is "NO" — "a small hit" — "a small hit" specific out of the presentation pattern group of business — if the presentation pattern of business is chosen (ST8) and it is "YES" — "great success" — "great success" specific out of the presentation pattern group of business — the presentation pattern of business is chosen (ST9). Here, each above-mentioned presentation pattern group ("HAZURE" the presentation pattern group of business, "hit" the presentation pattern group of business, "great success" presentation pattern group of business) is formed with two or more presentation patterns, respectively, and is stored in ROM22. And the pattern selected in this way is displayed on the liquid crystal display 6 (ST10), and about the reels 4L, 4C, and 4R under rotation, stop control according to a winning-a-prize request signal is performed (ST11), and it ends.

[0034]In the above-mentioned processing, the variable display of ST3 is realized, when CPU21 sends a driving signal to the motor drive circuit 31, drives the stepping motors 15L, 15C, and 15R and rotates the reels 4L, 4C, and 4R. The winning-a-prize judging of ST4 is realized by judging to which group the value of the random number which sampled the random number and was extracted from the random number generator 26 to proper timing belongs with said prize probability tables. And when judged with winning a prize, CPU21 sends the signal which carries out stop control of the reels 4L, 4C, and 4R to the pattern display position corresponding to the kind of winning a prize to the motor drive circuit 31. Thereby, stop control of ST11 is realized.

[0035]CPU21 performs simultaneously operation which sends the reel halt control signal based on the above-mentioned winning-a-prize judging to the motor drive circuit 31, and operation which sends the pattern display signal based on selection of the "presentation pattern" which displays a screen on the liquid crystal display 6 to the liquid crystal driving circuit 16. Therefore, while stop control of the rotation reel is carried out, a presentation pattern is displayed on the screen of the liquid crystal display 6. A "presentation pattern" is explained in detail later.

[0036]When it judges with winning a prize, CPU21 supplies the medal expenditure command signal corresponding to the kind of winning a prize to the hopper drive circuit 32, and pays the medal of a prescribed number out of the hopper 30. The number of sheets of the medal which the medal primary detecting element 35 pays out of the hopper 30 in that case is calculated, when the number-of-sheets data in which the enumerated data were specified is reached, the expenditure completion signal circuit 36 pays out CPU21, and a completion signal is inputted. Thereby, CPU21 suspends the drive of the hopper 30 via the hopper drive circuit 32, and ends expenditure processing of a medal.

[0037]As mentioned above, in the slot machine 1 of an embodiment, CPU as a control means judges generating of a "winning-a-prize request signal". The pattern of "great success" beforehand provided in the winning line according to the result or "a small hit" performs stop control of the reels 4L, 4C, and 4R so that the pattern of "HAZURE" may be located in a line, and. The display of the liquid crystal display 6 is controlled to display the presentation pattern in which a game person can expect "great success", "a small hit", or generating of "HAZURE".

[0038]On the other hand, when liquid crystal display 6 the very thing is provided with CPU as a display control part, CPU21 as a game control means sends the instructions for which a game person displays on the liquid crystal display 6 the presentation pattern which can expect "great success", "a small hit", or generating of "HAZURE" to CPU of the liquid crystal display 6, when performing the above-mentioned reel stop control. According to this, CPU of the liquid crystal display 6 determines a display image, and displays it on a screen.

[0039]Next, an example is given and explained about the "routine pattern" and the "presentation pattern" which are displayed on the display screen of the liquid crystal display 6.

[0040]Drawing 4 shows the example of the display image of the display window 3L before the reels 4L, 4C, and 4R rotate, 3C, the displaying condition in 3R, and the liquid crystal display 6. Here, the "title of the game" of an example of a routine pattern is displayed on the liquid crystal display 6. As other routine patterns, there is a display of "explanation of a game", "explanation in case reach occurs", etc., etc. When a routine pattern has two or more of these pictures, it may display one by one with a predetermined time interval.

[0041]Drawing 5 – drawing 8 show the example of the "presentation pattern" displayed on the liquid crystal display 6 one by one. In the liquid crystal display 6, "the cowboy over a horse" as shows drawing 5 appears at the same time the reels 4L, 4C, and 4R start rotation.

[0042]Here, the color of a background may be changed immediately after the rotation start of the reels 4L, 4C, and 4R, without erasing the routine pattern of the liquid crystal display 6, and the production showing the start of a game may be made.

[0043]It may be made to display no pictures on predetermined time until it starts the display of a presentation pattern to the liquid crystal display 6, and the liquid crystal display 6 after the rotation start of the reels 4L, 4C, and 4R. In this case, it is useful as production which heightens the feeling of tension which faces the start of a game.

[0044]Then, the winning-a-prize pattern in which rotation of the reels 4L and 4R on either side stops in which the display in a display window is right and left specific as shown in drawing 6 (in drawing 6.) When it changes into the state (reach) where the "WILD RODEO" pattern gathered, the display image of the liquid crystal display 6 becomes the display in the state "where a cowboy riots and it is fighting with the horse."

[0045]Then, as shown in drawing 7, when a display when a central reel stops will not be a specific winning-a-prize pattern (put together), the display image of the liquid crystal display 6 will be in the state "where the cowboy was shaken off from the horse", and a game person will miss winning a prize.

[0046]The winning-a-prize pattern in which a display as shown in drawing 8 on the other hand, when all the reels stop is specific (in drawing 8.) When gathered by three "WILD RODEO" patterns, the display image of the liquid crystal display 6 becomes the display in the state "where a victorious pose is made from the state where the cowboy rode on the horse", and a game person gains the profits corresponding to the winning a prize.

[0047]By displaying the above-mentioned presentation pattern on the screen of the liquid crystal display 6 as an animation, a game person senses that a cowboy rioting and not being shaken off from a horse leads to winning a prize. Therefore, if the screen of the liquid crystal display 6 is seen, it hopes a cowboy riots and it is not shaken off from a horse and a cowboy is finally shaken off, a game person will sense that winning a prize was missed, until all the reels stop. In this way, since a game person performs a game, doubling the presentation pattern which appears on the screen of the liquid crystal display 6, and the expectation for one's game result, and becoming it tense, the monotony of the conventional game is canceled.

[0048]As shown in drawing 4 – drawing 8, the liquid crystal display 6 is formed under the central reel 4C. Therefore, as shown in drawing 6, rotation of the reels 4L and 4R on either side stops, After being in the state (reach) where the "WILD RODEO" pattern which is a winning-a-prize pattern in which the display in a display window is right and left specific gathered, a game person, The display

image of the liquid crystal display 6 in the bottom of it can be seen simultaneously, without what is necessary's being to observe only the display of the reel 4C of the center the variable display continues, and moving an eye line to right and left, since the stopped pattern on either side is already recognized. Since concentration to the end of a game person's game is not reduced, and a motion of an eye line is also very small and ends by this, fatigue does not increase. Since it is easier to move an eye line caudad for the game person who takes notice of the display in a display window rather than moving an eye line up, it is easy to attract attention of a display image. A game person takes notice of the display of the central reel 4C, watching the screen of the liquid crystal display 6 hoping at the time of reach, a cowboy riots and it is not shaken off from a horse. When the central reel 4C stops after that, Since the picture corresponding to the game result which a display window displays, and this game result jumps into a field of view simultaneously from the central reel 4C and the liquid crystal display 6 located in the bottom of it, the correspondence relations or sense of togetherness of the game result of a display window and the display image of the liquid crystal display 6 can be directed.

[0049] After rotation of a reel stops, as a service game or a bonus game, When giving the opportunity of the game which does not need an injection or consumption of a medal for a game person, a picture as shown in drawing 4 is displayed on the screen of the liquid crystal display 6 as an omen which tells the start of such a game, and it may be made to display the animation following this till the end of the game concerned. If such an omen display is carried out, a game person will expect the start of a service game or a bonus game with the display image of the liquid crystal display 6, and will become the feeling which it gained.

[0050] Although the above-mentioned embodiment is provided with the liquid crystal display as a displaying means, The mechanical display device suspended and displayed with the arbitrary pictures in two or more pictures like the electric display device which arranged many dot display machines, such as a graphic display device like CRT and LED, instead of or rotation reel structure can also perform the same production as the display image of the above-mentioned embodiment. [a liquid crystal display] The display image which makes a game position favorable for a game person or a dangerous state recognize may be realized by the abstract display (for example, blink of a lamp) of those other than a character or a picture.

[0051] Although he is trying to display the control state of the variable display corresponding to the result of the original game on the liquid crystal display 6, it may be made to display the picture which can do another game with the liquid crystal display 6 in the above-mentioned embodiment. In that case, the data and the execution program of a display image for another game are stored in ROM22 of the microcomputer 20. And CPU21 performs processing shown in drawing 9 and drawing 10.

[0052] In drawing 9, if the power supply of a game machine is come on by first (ST21), CPU as a control means will display a "routine pattern" on the liquid crystal display 6 (ST22). If a game person does predetermined operation here (i.e., if the start lever 5 or the spin switch 8 is operated after throwing a medal into the medal slot 7 and operating the 1-BET switch 9 or the maximum BET switch 10), The reels 4L, 4C, and 4R rotate, and a variable display is started (ST23). At this time, it judges winning a prize / un-winning a prize based on the random number extracted by random number sampling (ST24). And the point of judging whether the "winning-a-prize request signal" having occurred (ST25), and determining the display mode of winning a prize or not winning a prize, according to the decided result is the same as that of processing of drawing 3.

[0053] However, in processing of drawing 9, the display image of the liquid crystal display 6 is a pattern which can perform two or more games as another game. Namely, if the "winning-a-prize request signal" has not occurred in the judgment of above-mentioned ST25, CPU, "Game 1" when the pattern of business is chosen (ST26) and a "winning-a-prize request signal" occurs, if it judges whether a "winning-a-prize request signal" corresponds to "great success" (ST27) and is "NO" — "the game 2" — if the pattern of business is chosen (ST28) and it is "YES" — "the game 3" — the

pattern of business is chosen (ST29). As "the game 1", the "game 2", and the "game 3", although the pattern which appears in the display 6 is the same, things different, respectively, such as a game from which winning—a-prize probability differs, or a game from which the appearing pattern and winning—a-prize probability differ, are set up beforehand.

[0054]Next, it is judged whether the conditions which start the game selected as mentioned above were ready (ST30). As a start condition, arbitrary things, such as a stop of one reel, a stop of two reels, a stop of all the reels, and specified time elapse, are defined beforehand, for example. When a start condition is except "a stop of all the reels", the game by the display of the liquid crystal display 6 will be started during rotation of a reel, and an original game and another game in the liquid crystal display 6 will be performed simultaneously.

[0055]When a start condition is ready in the above-mentioned judgment, as shown in drawing 10, processing for displaying the selected pattern for games on the screen of the liquid crystal display 6 is performed (ST31), and the game by it is performed. And the winning—a-prize judging of this game is performed (ST32). Although the judgment of winning a prize by random number sampling or not winning a prize, and the judgment of the kind of winning a prize may be sufficient as this winning—a-prize judging like an original game, it may prepare a winning—a-prize judging special for this game.

[0056]Winning processing is performed when judged with winning a prize (ST33), or [that this displays a specific winning—a-prize mode on the liquid crystal display 6, and also is the same as processing when the specified pattern of the reels 4L, 4C, and 4R is equal to the winning line 14 as mentioned above] — or any of the processing separately determined as it may be sufficient. On the other hand, when judged with un-winning a prize, non-winning processing is performed (ST34). That is, the specific mode not winning a prize is displayed on the liquid crystal display 6. Then, about the reels 4L, 4C, and 4R under rotation, stop control is performed (ST35) and it ends.

[0057]Drawing 11 shows the example of the display image of another game performed with the liquid crystal display 6 in relation to the game by the reels 4L, 4C, and 4R. In this example, the picture of the three move symbol trains 6L, 6C, and 6R which perform the variable display of two or more kinds of patterns like the three reels 4L, 4C, and 4R which perform the variable display of an original game is displayed on the screen of the liquid crystal display 6.

[0058]Another game of this example is a case of the "bonus game" started when it gathers in a winning—a-prize mode with a specific pattern located in a line along the winning line 14 when rotation of the reels 4L, 4C, and 4R stopped. At this time, the medal of a specified number pays out a game person as profits beforehand defined corresponding to the mode of that winning a prize. And when the variable display of the three symbol trains 6L, 6C, and 6R is carried out to the screen of the liquid crystal display 6 by the start of a "bonus game" and they carry out specified time elapse to it by it, movement of each symbol trains 6L, 6C, and 6R stops. If a specific symbol "DOUBLE" is located on center line 14' at this time, the medal of a specified number will pay out a game person again. Therefore, the opportunity for the profits gained by winning a prize of an original game to double by a "bonus game" is given to a game person.

[0059]In the case of the [the "lottery game"] started when it gathers in a winning—a-prize mode with a specific pattern located in a line along the winning line 14 as other examples of another game when rotation of the reels 4L, 4C, and 4R stopped, The symbol (number) located on center line 14' when the three symbol trains 6L, 6C, and 6R which carry out a variable display to the above-mentioned "bonus game" said appearance on the screen of the liquid crystal display 6 stop without defining distribution of profits beforehand corresponding to the winning—a-prize mode expresses distribution of profits, The medal of a specified number pays out by the distribution of profits for which it opted.

[0060]Although the display image for the display of a variable—display—control state of an original game or another game is displayed on the liquid crystal display 6 of an example of the displaying means in this invention as above, Besides these displays, the picture which shows the generating frequency or the incidence rate of winning a prize or HAZURE in the history of the past game result,

i.e., the already digested game, may be displayed. At for this reason, the times which provide a display switching button in the place (for example, the side side of the liquid crystal display 6) where the transverse plane of the slot machine of drawing 1 is suitable that it is arbitrary in a game. If a game person pushes this, the screen of the liquid crystal display 6 will be changed to winning a prize, or the generating frequency of HAZURE or the display of an incidence rate, and when a game person pushes a button again, it is made to return to a front screen. By the above-mentioned history display, the game person can judge whether it is a stand out of which a hit of the game machine which is going to begin a game tends to come.

[0061]As a picture which shows such a game history, for example winning a prize after a game start, or the survival rate (for example, winning a prize assumed to generate in 10,000 times of games or % of the number of times of HAZURE) of HAZURE, Digital display can be carried out in a number as carried out an analog display with a bar graph as shown in drawing 12 and drawing 13, and a pie chart as shown in drawing 14 or shown in drawing 15. The operation for these displays is performed by the microcomputer of the slot machine 1, or CPU (in a certain case) of liquid crystal display 6 the very thing.

[0062]As a pattern (symbol) which constitutes the pattern combination of winning a prize from an example of drawing 12, in detail "7", "BAR", a "bell" (figure), A "cherry" (figure) is shown and each survival rate is displayed on the screen of the liquid crystal display 6 about these patterns and other patterns (symbol used as "HAZURE"). As a pattern "7" is shown in drawing 13 as an example, the bar graph showing the survival rate (%) for every pattern at the power up of the slot machine 1, or the time of reset, lighting or the portion displayed brightly — 100% of state — it is (drawing 13 A). While the game is repeated, whenever the state where the pattern combination at the time of a stop of the three rotation reels 4L, 4C, and 4R serves as great success of "7-7-7" arises, lighting or a bright portion decreases 10% respectively (drawing 13 B-D), lighting or the highlighted part which expresses the survival rate (%) for every pattern also with the pie chart of drawing 14 — great success — producing — whenever — decreasing . The same can be said for other patterns. In the digital display of drawing 15, the number which expresses a survival rate (%) for every pattern changes.

[0063]Arrangement of the liquid crystal display 6 of an example of a displaying means may provide in the display window 3L, 3C, the bottom whole region of 3R, the right-hand side left-hand side display window 3L or display window 3R bottom, etc., as shown, for example in drawing 16 not only in the display window 3C bottom like drawing 1.

[0064]It may be a game machine possessing the variable display device with which three or more patterns are displayed on each display window, and two or more winning lines become effective under predetermined conditions.

[Translation done.]

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TECHNICAL PROBLEM

[Problem to be solved by the invention]However, in the game machine indicated to above-mentioned JP,H8-206328,A, Since the game display for indication formed independently is operated, and the game display for indication does not operate until the result of the game of the game machine itself comes out, time after the hit state of a game machine occurs until the state is completed, and a game machine, About waiting until a result comes out from the start of a game, it is not different from the conventional thing at all.

[0007]Also in the slot machine indicated to JP,H8-10385,A, Since the sub display does not operate while the main display which the game in a sub display is performed into the service time produced after the usual game completion, and performs the original game of a slot machine is operating, there are not the former and a change at a point with the monotony of waiting until a result comes out from the start of a game.

[0008]As mentioned above, according to the conventional game machine, even if it established the displaying means other than the variable display device for a game, the game person was only looking at the pattern by which a variable display is carried out from the original game start before the end.

[0009]The purpose of this invention is to give a game person a certain display (another display) from the operation start of the variable display device which displays a pattern required for a game before an end, Monotony until it waits for the result of the game performed with a variable display device is canceled, and it is in providing the game machine which can give another display legible for the game person who is taking notice of the variable display.

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MEANS

[Means for solving problem]In a game machine provided with a variable display device which carries out the variable display of two or more patterns which need the 1st mode of this invention for a game, and a control means which controls a variable display of this variable display device, A displaying means which can display arbitrary pictures is provided, a picture displayed on this displaying means is determined in relation to variable display control by a control means, and a display position of this displaying means is set to the variable display position bottom of a variable display device.

[0011]As a displaying means, a mechanical display device of rotation reel structure used on electric display devices, such as a liquid crystal, CRT, and LED, or the conventional slot machine can be used. A display image is distinguished and expressed with various characters, blink of a figure, an animation, or light, etc. which can be expressed with such a display device. As a kind of display image, there are an omen display of "great success", a promotion display which means promotion of "great success", a display which means "great success", a display which means "HAZURE", a display from which "great success" is made to expect, etc., for example, it can store in memory storage of a microcomputer beforehand as data.

[0012]In the 2nd mode, a variable display device has two or more fluctuation display means which carried out arranging in parallel to a transverse direction, and a displaying means is arranged under a specific display position of a fluctuation display means controlled to stop at the end by a control means.

[0013]A variable display device is controlled by the 3rd mode so that a fluctuation display means arranged in the center stops at the end, and in it, a displaying means is arranged under a display position of a fluctuation display means of the center.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

Drawing 1The perspective view showing the appearance of the slot machine of the embodiment of this invention.

Drawing 2The block diagram showing the circuitry used for the slot machine of drawing 1.

Drawing 3The flow chart which shows a part of control action of an embodiment.

Drawing 4The figure showing the example of the displaying condition before the variable display start of an embodiment, and the display image of a liquid crystal display.

Drawing 5The figure showing the displaying condition after a variable display start, and the display image of a liquid crystal display.

Drawing 6The figure in which a variable display's displaying a reach condition and showing the display image of the liquid crystal display at that time.

Drawing 7The figure in which displaying the pattern which a variable display is turned off and serves as "HAZURE", and showing the display image of the liquid crystal display at that time.

Drawing 8The figure in which displaying the pattern which a variable display is turned off and is "becoming it a great success", and showing the display image of the liquid crystal display at that time.

Drawing 9The flow chart which shows the procedure in the case of displaying another game to the liquid crystal display of an embodiment.

Drawing 10The flow chart following drawing 9.

Drawing 11The figure showing the example of the display image of another game performed with the liquid crystal display of an embodiment.

Drawing 12The figure showing the state of displaying the survival rate of each pattern with the bar graph, with the liquid crystal display of an embodiment.

Drawing 13The figure showing the example of change of a bar graph display about one pattern of drawing 12.

Drawing 14The figure showing the case where the survival rate of one pattern is displayed with a pie chart.

Drawing 15The figure showing the state of displaying the survival rate of each pattern numerically with the liquid crystal display of an embodiment.

Drawing 16The perspective view showing the appearance of the slot machine of another embodiment of this invention.

[Explanations of letters or numerals]

1 — A slot machine, 2 — A cabinet, 3L, 3C, 3R — Display window, 4L, 4C, 4R — A reel, 5 — A start lever, 6 — Liquid crystal display, 7 [— Maximum BET switch,] — A medal slot, 8 — A spin switch, 9 — 1-BET switches 9 and 10 11 — A C/P switch, 12 — A medal expenditure mouth, 13 — Medal holder part, 14 — A winning line, 15L, 15C, 15R — Stepping motor, 16 [— ROM,] — A liquid crystal driving circuit, 20 — A microcomputer, 21 — CPU, 22 23 [.... A random number generator,

27 / — A random number sampling circuit, 30 / — A hopper, 31 / — A motor drive circuit, 32 / — A hopper drive circuit, 34 / — A reel position detecting circuit, 35 / — A medal primary detecting element, 36 / — Expenditure completion signal circuit.] — RAM, 24 — Clock pulse generating circuits, 25 — A counting-down circuit, 26

[Translation done.]

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DRAWINGS

[Drawing 4]

FIG. 4

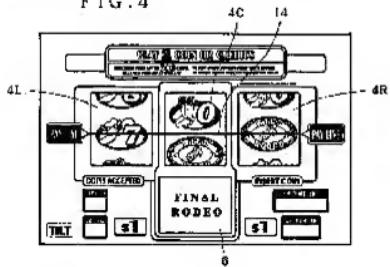
**[Drawing 5]**

FIG. 5

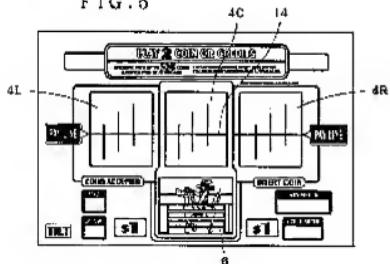
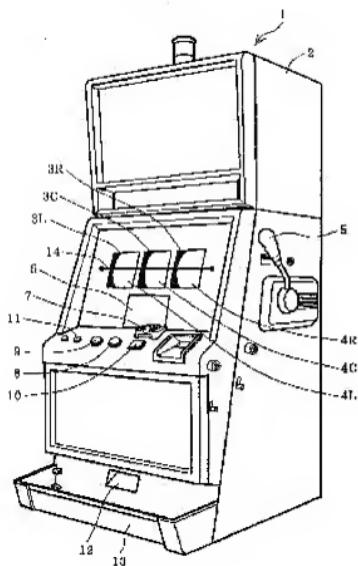
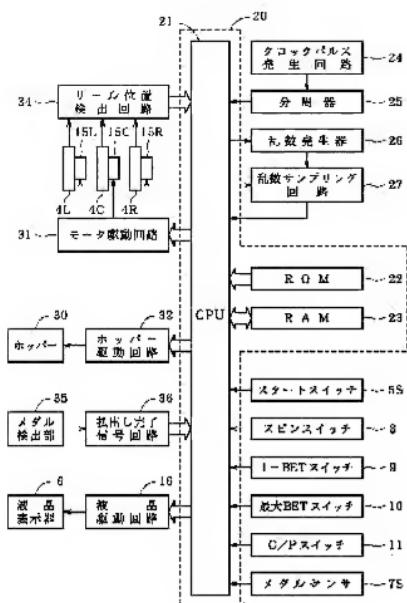
**[Drawing 1]**

FIG. 1



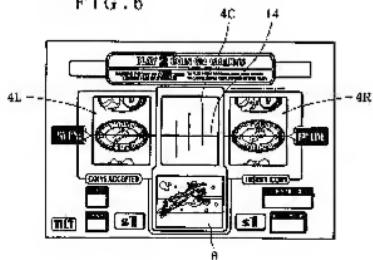
[Drawing 2]

FIG. 2



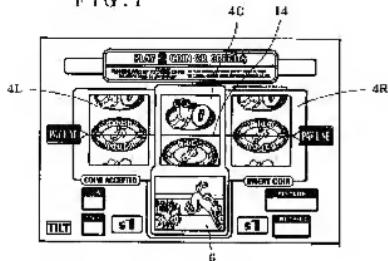
[Drawing 6]

FIG. 6



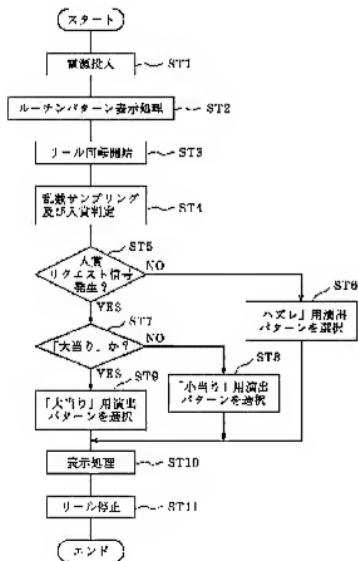
[Drawing 7]

FIG. 7



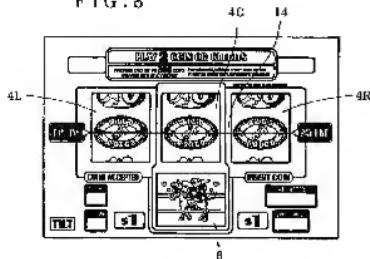
[Drawing 3]

FIG. 3



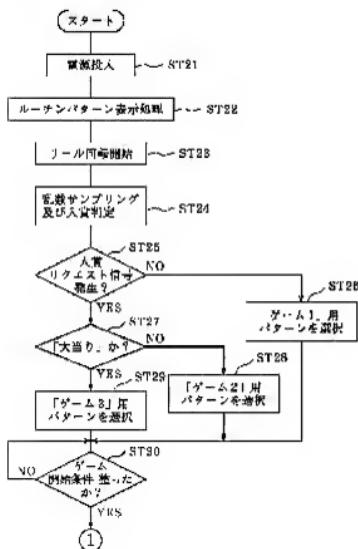
[Drawing 8]

FIG. 8



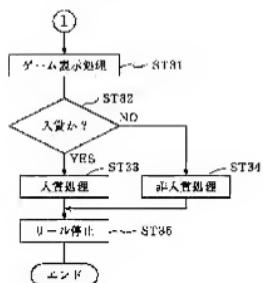
[Drawing 9]

FIG. 9



[Drawing 10]

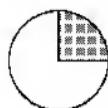
FIG. 10



[Drawing 14]

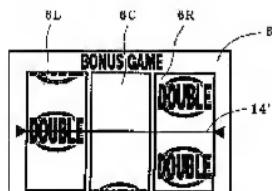
FIG. 14

27



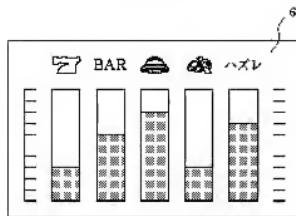
[Drawing 11]

FIG. 11



[Drawing 12]

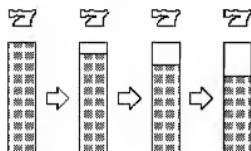
FIG. 12



[Drawing 13]

FIG. 13

(A) (B) (C) (D)



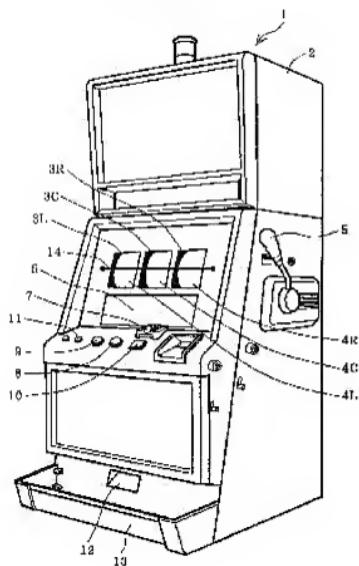
[Drawing 15]

FIG. 15

20	50	15	30	40

[Drawing 16]

FIG. 18



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CORRECTION OR AMENDMENT

[Kind of official gazette]Printing of amendment by regulation of Patent Law Article 17 of 2
 [Section Type] The 2nd Type of the part I gate
 [Publication date]Heisei 14(2002) July 30 (2002.7.30)

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 [Application number]Japanese Patent Application No. 10-19635
 [The 7th edition of International Patent Classification]

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516
 F

A63F 5/04 512 D

516 F
 [Written Amendment]
 [Filing date]Heisei 14(2002) May 10 (2002.5.10)
 [Amendment 1]
 [Document to be Amended]Description
 [Item(s) to be Amended]0002
 [Method of Amendment]Change
 [Proposed Amendment]
 [0002]

[Description of the Prior Art]For example, the game machine called a slot machine or a pachislot, A variable display device mechanically constituted from carrying out the multiple arrays of the rotation reel which expressed two or more patterns in the front display window, Or it has the variable display device electrically constituted from displaying the pattern on a reel on a screen, According to a game person's start operation, a control means drives a variable display device and rotates each reel, When stopping rotation of each reel one by one by a game person's stopping operation automatically after fixed time, and the pattern of each reel in which it appeared in the display window becomes a specific combination (winning—a—prize pattern), give a game person profits by paying out game media, such as coin, but. That a winning—a—prize pattern gathers on the effective line of a display when a revolving reel stops in a mainstream model now is a case where winning a prize is won in the internal processing of a game machine (when it specifically wins by the lottery by random number extraction with a microcomputer). If the pattern at the time of a stop is determined

only by a game person's stopping operation (timing), this, The problem that the result (victory or defeat) of a game is decided, only a game person's skill is emphasized, and the soundness of a game is spoiled by a game person's level of skill, and the problem that management of the coin expenditure rate from a game machine, etc. becomes difficult also for a game store are solved.

[Amendment 2]

[Document to be Amended]Description

[Item(s) to be Amended]0022

[Method of Amendment]Change

[Proposed Amendment]

[0022]By push button operation of 8 or 1 spin switch for putting said reel into operation by push button operation under the liquid crystal display 6 apart from operation of the medal slot 7 into which the medal of a game medium is put, and the above-mentioned start lever 5. Among the medals by which the credit is carried out, only one sheet. The maximum BET switch 10 for betting the medal of the maximum number of sheets which can be risked on the game of 9 or 1 1-BET switch for risking on a game, and the C/P switch 11 which switches the credit/expenditure of the medal which the game person won by push button operation are arranged, The medal holder part 13 grade which collects the medal paid out of the medal expenditure mouth 12 of the lower part of a transverse plane by the change of the C/P switch 11 in the lower part of the transverse plane of the cabinet 2 is arranged.

[Amendment 3]

[Document to be Amended]Description

[Item(s) to be Amended]0029

[Method of Amendment]Change

[Proposed Amendment]

[0029]After rotation of the reels 4L, 4C, and 4R is started, the number of the drive pulses supplied to each of the stepping motors 15L, 15C, and 15R is calculated, and the enumerated data are written in the prescribed area of RAM23. A reset pulse is obtained from the reels 4L, 4C, and 4R for every one revolution, and these pulses are inputted into CPU21 via the reel position detecting circuit 34. CPU21 clears to "0" the drive pulse enumerated data stored in RAM23 by the reset pulse obtained in this way. Thereby, in RAM23, the enumerated data corresponding to the rotary place of the one revolution within the limits are stored about each reels 4L, 4C, and 4R.

[Amendment 4]

[Document to be Amended]Description

[Item(s) to be Amended]0048

[Method of Amendment]Change

[Proposed Amendment]

[0048]As shown in drawing 4 – drawing 8, the liquid crystal display 6 is formed under the central reel 4C. Therefore, as shown in drawing 6, rotation of the reels 4L and 4R on either side stops, After being in the state (reach) where the "WILD RODEO" pattern which is a winning-a-prize pattern in which the display in a display window is right and left specific gathered, a game person, The display image of the liquid crystal display 6 in the bottom of it can be seen simultaneously, without what is necessary's being to observe only the display of the reel 4C of the center the variable display continues, and moving an eye line to right and left, since the stopped pattern on either side is already recognized. Thereby, a game person does not reduce the concentration to the end of a game, and since a motion of an eye line is also very small and ends, fatigue does not increase. Since it is easier to move an eye line caudad for the game person who takes notice of the display in a display window rather than moving an eye line up, it is easy to attract attention of a display image. A game person takes notice of the display of the central reel 4C, watching the screen of the liquid crystal display 6 hoping at the time of reach, a cowboy riots and it is not shaken off from a horse, When the central reel 4C stops after that, Since the picture corresponding to the game result which

a display window displays, and this game result jumps into a field of view simultaneously from the central reel 4C and the liquid crystal display 6 located in the bottom of it, the correspondence relations or sense of togetherness of the game result of a display window and the display image of the liquid crystal display 6 can be directed.

[Amendment 5]

[Document to be Amended]Description

[Item(s) to be Amended]0053

[Method of Amendment]Change

[Proposed Amendment]

[0053]However, in processing of drawing 9, the display image of the liquid crystal display 6 is a pattern which can perform two or more games as another game. Namely, if the "winning-a-prize request signal" has not occurred in the judgment of above-mentioned ST25, CPU, "Game 1" when the pattern of business is chosen (ST26) and a "winning-a-prize request signal" occurs, if it judges whether a "winning-a-prize request signal" corresponds to "great success" (ST27) and is "NO" — "the game 2" — if the pattern of business is chosen (ST28) and it is "YES" — "the game 3" — the pattern of business is chosen (ST29). As "the game 1", the "game 2", and the "game 3", although the pattern which appears in the liquid crystal display 6 is the same, things different, respectively, such as a game from which winning-a-prize probability differs, or a game from which the appearing pattern and winning-a-prize probability differ, are set up beforehand.

[Translation done.]

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5 1 6 F

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平成10年(1998)1月30日

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(74)代理人 弁理士 堀 造 (外1名)

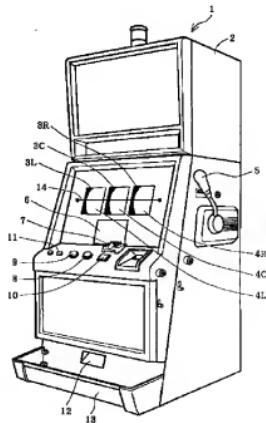
(54)【発明の名称】 遊技機

(57)【要約】

【課題】 遊技に必要な図柄を表示する可変表示装置の作動開始から終了までの間に、遊技者に何らかの表示(別表示)を行って、可変表示装置で行われる遊技の結果を待つまでの単調さを解消すると共に、可変表示に注目している遊技者にとって見易い別表示を与えることができる遊技機を提供する。

【解決手段】 遊技に必要な複数の図柄を可変表示する可変表示装置(4L, 4C, 4R)と、その可変表示を制御する制御手段とを備えた遊技機(1)において、可変表示装置(4L, 4C, 4R)の可変表示位置の下側に任意の画像を表示可能な表示器(6)が設けられる。これに表示される画像は、制御手段又は別の制御部により、可変表示制御に関連して決定される。

FIG. 1



【特許請求の範囲】

【請求項1】遊技に必要な複数の図柄を可変表示する可変表示装置と、該可変表示装置の可変表示を制御する制御手段とを備えた遊技機において、任意の画像を表示可能な表示手段を具備し、該表示手段に表示される画像は前記制御手段による可変表示制御に関連して決定され、該表示手段の表示位置は前記可変表示装置の可変表示位置の下側に設定されていることを特徴とする遊技機。

【請求項2】請求項1記載の遊技機において、前記可変表示装置は横方向に並列配置した複数の変動表示手段を有し、前記制御手段が最後に停止するように制御する特定の変動表示手段の表示位置の下に、前記表示手段が配置されていることを特徴とする遊技機。

【請求項3】請求項2記載の遊技機において、前記特定の変動表示手段は前記可変表示装置の中央に配置した変動表示手段であることを特徴とする遊技機。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、遊技に必要な複数の図柄を可変表示する可変表示装置と、この可変表示を制御するマイクロコンピュータ（以下、マイコンという）等の制御手段とを備えたスロットマシン、パチスロその他の遊技機に関する。

【0002】

【従来の技術】例えば、スロットマシン或いはパチスロと称される遊技機は、正面の表示窓内に複数の図柄を表わした回転リールを複数枚配列することで機械的に構成した可変表示装置、或いはリール上の図柄を画面に表示することで電気的に構成した可変表示装置を有し、遊技者のスタート操作に応じて、制御手段が可変表示装置を駆動して各リールを回転させ、一定時間後自動的に或いは遊技者の停止操作により各リールの回転を順次停止させた時、表示窓内に現れた各リールの図柄が特定の組み合合わせ（入賞図柄）になった場合にコイン等の遊技媒体を払い出すことで遊技者に利益を付与するものであるが、現在主流の機種においては、回転しているリールが停止した時に入賞図柄が表示部の有効ライン上に揃うのは、遊技機の内部処理で入賞に当たった場合（具体的には、マイコンでの乱数抽出による抽選で当選したとき）である。これは、遊技者の停止操作（タイミング）だけで停止時の図柄を決定すると、遊技者の熟練度によって遊技の結果（勝敗）が決まってしまい、遊技者の技量のみが強調されて遊技の健全さが損なわれると共に、遊技店にとっても遊技機からのコイン払出手率等の管理が困難になるという問題を解決するためである。

【0003】このような遊技機では、可変表示の停止時に表示する図柄の決定及びそのような図柄で可変表示を停止させる制御はマイコンで行われるが、遊技者にとっては、停止時の表示態様がどのようになるかを予想するのが困難で、実際に可変表示が停止するまで、遊技の結

果が出るのを待つのみであった。そこで、このような遊技の他に何らかの表示を行うことで遊技の物足りなさを補うようにした遊技機が提案されている。

【0004】例えば、特開平8-206328号公報には、所定の当り状態の発生と連動して動作するゲーム表示器を設け、このゲーム表示器に当り状態が発生したときに遊技機を当り状態とすることにより、遊技機の大当たり状態が終了しても、ある時間その余韻を楽しむことができ、且つ遊技機の当り発生の確率を増大させるという発明が開示されている。

【0005】また、特開平8-10385号公報には、複数の図柄を可変表示する主表示部の他に副表示部を設け、コイン投入なしにゲーム可能な設定時間に割り込む制御を行い、副表示部におけるゲームを実行するスロットマシンが開示されている。

【0006】

【発明が解決しようとする課題】しかしながら、上記特開平8-206328号公報に記載された遊技機においては、遊技機の当り状態が発生してからその状態が終了するまでの時間、遊技機とは別に設けたゲーム表示器を作動させるものであり、遊技機自体の遊技の結果が出るまでゲーム表示器は作動しないので、遊技の開始から結果が出るまで待つことについては従来のものと何ら変わるものではない。

【0007】また、特開平8-10385号公報に記載されたスロットマシンにおいても、通常の遊技終了後に生ずるサービスタイム中に副表示部でのゲームが行われるものであり、スロットマシン本来の遊技を行う主表示部が作動しているとき副表示部は作動しないので、遊技の開始から結果が出るまで待つという単調さがある点で従来と変わらない。

【0008】以上のよう、従来の遊技機によれば、遊技のための可変表示装置のほかに表示手段を設けても、本来の遊技開始から終了までの間、遊技者は可変表示される図柄を眺めているだけであった。

【0009】本発明の目的は、遊技に必要な図柄を表示する可変表示装置の作動開始から終了までの間に、遊技者に何らかの表示（別表示）を行なうことで、可変表示装置で行なれる遊技の結果を今までの単調さを解消すると共に、可変表示に注目している遊技者にとって見易い別表示を与えることができる遊技機を提供することにある。

【0010】

【課題を解決するための手段】本発明の第1の態様は、遊技に必要な複数の図柄を可変表示する可変表示装置と、該可変表示装置の可変表示を制御する制御手段とを備えた遊技機において、任意の画像を表示可能な表示手段と、該表示手段に表示される画像は制御手段による可変表示制御に関連して決定され、該表示手段の表示位置は可変表示装置の可変表示位置の下側に設定され

ていることを特徴とする。

【0011】表示手段としては、液晶、CRT、LEDなどの電気的表示装置、或いは從来のスロットマシンなどで用いられている回転リール構造の機械的表示装置を使用できる。表示画像は、このような表示装置で表現できる種々の文字や図形、動画或いは光の点滅等で区別して表わされる。表示画像の種類としては、「大当たり」の予兆表示、「大当たり」の推進を意味する推進表示、「大当たり」を意味する表示、「ハズレ」を意味する表示、「大当たり」を期待させる表示等があり、例えばマイコンの記憶装置にデータとして予め格納可能である。

【0012】第2の態様では、可変表示装置は横方向に並列配置した複数の変動表示手段を有し、制御手段によって最後に停止するように制御される特定の変動表示手段の表示位置の下に、表示手段が配置される。

【0013】第3の態様では、可変表示装置は中央に配置した変動表示手段が最後に停止するように制御され、その中央の変動表示手段の表示位置の下に、表示手段が配置される。

【0014】

【作用及び効果】第1の態様によれば、遊技時には、制御手段が可変表示装置の可変表示を制御する。そして、可変表示の停止時に表示される図柄により、遊技結果が入賞あるいは非入賞（いわゆる「ハズレ」）となって現れる。制御手段による可変表示制御は、遊技結果に対応して可変表示の停止時に表示すべき図柄を決定し、その図柄で停止するように可変表示を制御することである。この制御に連動して決定された画像が、可変表示装置とは別に設けられた表示手段に表示される。これにより、遊技者は、可変表示装置による可変表示中に遊技の結果を予想したり期待したりすることができる。

【0015】上記可変表示制御に連動して決定される画像とは、制御手段で決定した遊技結果の内容（入賞かハズレか、入賞の種類等）に対応して行われる制御の状態を示すような表示、或いは後述の別遊技を行なうために必要な表示である。このような表示画像の決定は、制御手段により行われる。或いは、表示手段自体が制御手段からの指示命令に応じて表示画像を決定する表示制御部を含んでいる場合には、その表示制御部で行われる。

【0016】遊技者は、表示手段による別表示を見ながら、可変表示装置の可変表示も注目しなければならないため、可変表示装置の可変表示と別表示が同時に遊技者の視界に入ることが望ましい。表示手段の表示位置は可変表示装置の可変表示位置の下側に設定されているので、可変表示を見ていた目線をわざかに下に移すだけで、表示手段の表示を見る事ができる。また、下部の方が遊技者の注意を引きやすく、目線の動きもわざかであるから、遊技者は可変表示に注目しながら別表示も容易に見ることができる。

【0017】可変表示装置が横方向に並列配置した複数

の回転リールのような変動表示手段で構成されている場合、それら複数の変動表示手段のうち、最後に停止するよう制御される変動表示手段が停止して特定の図柄を表示すれば入賞の表示態様となる状態（リーチ）になった時、遊技者は、最後に停止する変動表示手段の変動表示に注目する。

【0018】第2の態様によれば、表示手段は、最後に停止するよう制御される特定の変動表示手段の下に配置されているので、遊技者は、注目する変動表示手段の変動表示から目を逸らすことなく表示手段の表示を見ることが容易になる。更に、表示される表示画像が容易に遊技者の視界に入ることから、表示画像と可変表示装置の停止結果との関連ない対応関係を遊技者に認識させることができる。

【0019】第3の態様によれば、可変表示装置を形成する横方向に並列配置した複数の変動表示手段のうち、中央に位置する変動表示手段が最後に停止するように制御され、その中央に位置する変動表示手段の下に表示手段が配置されているので、変動表示が特定の図柄をあと一つ表示すると入賞の表示態様となるリーチ状態になった時、遊技者の目線がたどり左方に逸れていたとしても、中央に位置する表示画像が容易に遊技者の視野に入り、注意を引きやすい。また、注目すべき表示が中央に位置することは、遊技者にとっては見やすく、余計な目線の移動を要しないため疲労低減にもつながる。

【0020】

【発明の実施の形態】図1は、本発明の一実施例のスロットマシンの外観を示す斜視図である。このスロットマシン1は、遊技媒体としてコイン、メダル又はトークンなどを用いて遊技する遊技機であるが、以下ではメダルを用いるものとして説明する。

【0021】スロットマシン1の全体を形成しているキャビネット2の正面には、横に並んだ3つの表示窓3L、3C、3Rが設けられ、各表示窓の中央の入賞ライン1又はその下の位置に種々の図柄が表示される（図6参照）。これらの図柄は、表示窓3L、3C、3Rに対応してキャビネット2の内部に配置した3つの回転リール4L、4C、4Rの円周面を形成するシートの表面に描かれている。これらの回転リールにより、可変表示装置が構成されている。キャビネット2の側面部には、遊技者の操作により上記リールを回転させるためのスタートレバー5が所定の角度範囲で回動自在に取り付けられている。また、キャビネット2の正面部の表示窓の下方中央には、本発明における表示手段の一例としての液晶表示器6が配置されている。その表示画像については、後で詳説する。

【0022】液晶駆動回路6の下方には、遊技媒体のメダルを入れるメダル投入口7、上記スタートレバー5の操作とは別に押しボタン操作で前記リールを始動するためのスピニスイッチ8、1回の押しボタン操作により、

クレジットされているメダルのうち1枚だけをゲームに賭けるための1-BETスイッチ9、1回のゲームに賭けることが可能な最大枚数のメダルを賭けるための最大BETスイッチ10、遊技者が獲得したメダルのクレジット／払い出しを押しボタン操作で切り換えるC/Pスイッチ11が配置され、キャビネット2の正面下部には、C/Pスイッチ11の切換えにより正面下部のメダル払出口12から払い出されるメダルを貯めるメダル受け部13等が配置されている。

【0023】図2は、スロットマシン1における遊技処理動作を制御する制御部と、これに電気的に接続する周辺装置（アクチュエータ）とを含む回路構成を示す。

【0024】この場合、制御手段は、マイコン20を中心とする構成要素とし、これに乱数サンプリングのための回路を加えて構成されている。マイコン20は、予め設定されたプログラムに従って制御動作を行うCPU21と、記憶手段であるROM22及びRAM23を含み、CPU21に、基準クロックパルスを発生するクロックパルス発生回路24及び分周器25と、サンプリングされる乱数を発生する乱数発生器26及び乱数サンプリング回路27とが接続されている。なお、乱数サンプリングのための手段として、マイコン20内で、すなわちCPU21の動作プログラム上で乱数サンプリングを実行するよう構成してもよい。その場合、乱数発生器26及び乱数サンプリング回路27は省略可能であり、或いは、乱数サンプリング動作のバックアップ用として残しておくことも可能である。

【0025】マイコン20のROM22には、スロットマシンの遊技制御のほか、後述の複数の表示画像を液晶表示器6の画面に表示する処理を実行するために必要な情報やデータが格納されている。

【0026】図2の回路において、マイコン20からの制御信号により動作が制御される主要なアクチュエータとしては、前記リール4L、4C、4Rをそれぞれ回転駆動するステッピングモータ15L、15C、15Rと、遊技媒体のメダルを収納するホッパー（払い出しのための駆動部を含む）30と、前述の表示画面があり、それぞれモータ駆動回路31、ホッパー駆動回路32、液晶駆動回路16を介してCPU21の出力端に接続されている。これらの駆動回路は、CPU21から出力される駆動指令などの制御信号を受けて、各アクチュエータの動作を制御する。

【0027】また、マイコン20が制御信号を発生するために必要な入力信号を発生する主な入力信号発生手段として、メダル投入口7に投入されたメダルを検出するメダルセンサ7S、スタートレバー5の操作を検出するスタートスイッチ5S、スピニンスイッチ8、1-BETスイッチ9、最大BETスイッチ10、C/Pスイッチ11、可変表示装置のリール回転検出器からのパルス信号を受けて各リールの位置を検知するための信号をCPU

U21へ供給するリール位置検出回路34、及び、ホッパー30から払い出されたメダルを検出するメダル検出部35の計数値が指定された枚数データに達した時にメダル払い出し完了を検知するための信号をCPU21へ供給する払出し完了信号回路36が、CPU21の入力端に接続されている。

【0028】図2の回路において、乱数発生器26は、所定の数値範囲に属する乱数を発生し、サンプリング回路27は、スタートレバー5が操作された後適当タイミングで1個の乱数をサンプリングする。こうしてサンプリングされた乱数は、ROM22内の記憶部に格納されているもので定めた入賞額規に属しているかが判定され、入賞額規に属していれば「入賞リクエスト信号」を発生する。

【0029】リール4L、4C、4Rの回転が開始された後、ステッピングモータ15L、15C、15Rの各々に供給される駆動パルスの数が計数され、その計数値はRAM23の所定エリアに書き込まれる。リール4L、4C、4Rからは各々の一回転位にリセットパルスが得られ、これらのパルスはリール位置検出回路35を介してCPU21に入力される。CPU21は、こうして得られたリセットパルスにより、RAM23に格納した駆動パルス計数値を“0”にクリアする。これにより、RAM23内には、各リール4L、4C、4Rについて一回転の範囲内における回転位置に対応した計数値が格納される。

【0030】上記のようなリール4L、4C、4Rの回転位置と回転数を対応づけたため、回転テーブルがROM22に格納されている。更に、ROM22には、入賞回路組合せテーブルが格納されている。この入賞回路組合せテーブルで、入賞となる回転の組合せと、入賞のメダル配当枚数と、その入賞を表す入賞判定コードとが対応づけられる。入賞回路組合せテーブルは、リール4L、4C、4Rの制御を行っている時、及び全リール停止後の入賞確認を行う時に参照される。

【0031】また、ROM22には、上記「入賞リクエスト信号」の発生前に液晶表示器6に後述の「ルーチンパターン」を表示し、「入賞リクエスト信号」の発生後には「演出パターン」を表示する処理を実行するためのプログラムと、ルーチンパターンや演出パターンを含む複数の表示画像データ、及びこれらの中から表示すべき画像を選択するための基準等を示すデータとが格納されている。

【0032】図3は、液晶表示器6の表示を制御する動作の処理手順を示す。この処理は、スロットマシン1の遊技制御手段であるマイコン20のCPU21で実行されるが、液晶表示器6のような表示手段自体に制御部としてのCPUを持たせた場合には、そのCPUが遊技制御手段としてのCPU21からの表示指令（例えば、入賞の種類又はハズレに対応した表示指令）に応じ

て表示画像を決定するようにしてもよい。

【0033】図3において、初めて遊戯機（スロットマシン1）の電源がオンになると（ステップST1）、制御手段としてのCPUは、表示画面6の画面に「ルーチンパターン」を表示させる（ST2）。ここで遊戯者が所定の操作をすると、すなわち、メダル投入口7にメダルを投入し、1-BETスイッチ9又は最大BETスイッチ10を操作した後、スタートレバー5又はスピンドルスイッチ8を操作すると、リール4L, 4C, 4Rが回転して可変表示を開始する（ST3）。この時、乱数サンプリングにより抽出した乱数に基づいて入賞／非入賞の判定を行う（ST4）。そして「入賞リクエスト信号」が発生したかどうかを判定し（ST5）、その判定結果に応じて表示画像を決定する。すなわち、「入賞リクエスト信号」が発生していないければ、「ハズレ」用の演出パターン群の中から特定の演出パターンを選択する（ST6）。「入賞リクエスト信号」が発生したときは、その「入賞リクエスト信号」が「大当たり」に該当するか否かを判定し（ST7）、「NO」であれば「小当たり」用の演出パターン群の中から特定の「小当たり」用の演出パターンを選択し（ST8）、「YES」であれば「大当たり」用の演出パターン群の中から特定の「大当たり」用の演出パターンを選択する（ST9）。ここで、上記各演出パターン群（「ハズレ」用の演出パターン群、「当たり」用の演出パターン群、「大当たり」用の演出パターン群）はそれぞれ複数の演出パターンで形成し、ROM2に収められている。そして、このように選択したパターンを液晶表示器6に表示させ（ST10）、回転中のリール4L, 4C, 4Rについて入賞リクエスト信号に応じた停止制御を行って（ST11）、終了する。

【0034】上記の処理において、ST3の可変表示は、CPU21がモータ駆動回路31に駆動信号を送り、ステッピングモータ1L, 1C, 1Rを駆動してリール4L, 4C, 4Rを回転することにより実現される。また、ST4の入賞判定は、適宜のタイミングで乱数発生器26から乱数をサンプリングし、抽出した乱数の値が前記入賞確率テーブルでどのグループに属するかを判定することにより、実現される。そして、入賞と判定された場合には、CPU21は、入賞の種類に対応した図柄表示位置にリール4L, 4C, 4Rを停止制御する信号をモータ駆動回路31に送る。これにより、ST11の停止制御が実現される。

【0035】CPU21は、上記の入賞判定に基づくリール停止制御信号をモータ駆動回路31に送る動作と、液晶表示器6に画面を表示する「演出パターン」の選択に基づくパターン表示信号を液晶駆動回路16に送る動作とを同時に実行する。従って、回転リールが停止制御される間、液晶表示器6の画面には演出パターンが表示される。「演出パターン」については、後で詳細に説明する。

【0036】CPU21は、入賞と判定した場合には、入賞の種類に対応したメダル払出し指令信号をホッパー駆動回路32に供給してホッパー30から所定個数のメダルの払い出しが行う。その際、メダル検出部35は、ホッパー30から払い出されるメダルの枚数を計数し、その計数値が指定された枚数データに達した時点で、払出し完了信号回路36がCPU21に払い出し完了信号を入力する。これにより、CPU21は、ホッパー駆動回路32を介してホッパー30の駆動を停止し、メダルの払い出し処理を終了する。

【0037】上記のように、実施例のスロットマシン1では、制御手段としてのCPUが「入賞リクエスト信号」の発生を判定し、その結果に応じて、入賞ラインに予め定めた「大当たり」又は「小当たり」の図柄が描かれるか又は「ハズレ」の図柄が並ぶようにリール4L, 4C, 4Rの停止制御を行うと共に、遊戯者が「大当たり」、「小当たり」又は「ハズレ」の発生を予想できる演出パターンを表示するよう液晶表示器6の表示を制御する。

【0038】一方、液晶表示器6自体が表示制御部としてCPUを備えている場合には、遊戯制御手段としてのCPU21は、上記のリール停止制御を行いつつ、遊戯者が「大当たり」、「小当たり」又は「ハズレ」の発生を予想できる演出パターンを液晶表示器6に表示させる指令を、液晶表示器6のCPUに送る。これに応じて、液晶表示器6のCPUが表示画像を決定し、それを画面に表示する。

【0039】次に、液晶表示器6の表示画面に表示される「ルーチンパターン」と「演出パターン」について、例を挙げて説明する。

【0040】図4は、リール4L, 4C, 4Rが回転する前の表示窓3L, 3C, 3Rにおける表示状態と液晶表示器6の表示画像の例を示す。ここでは、液晶表示器6にルーチンパターンの一例の「ゲームの題名」が表示されている。他のルーチンパターンとしては、「ゲームの説明」や「リーチが発生する場合の説明」等の表示がある。ルーチンパターンがこれらの複数の画像を有する場合は、所定の時間間隔で順次表示してもよい。

【0041】図5～図8は、液晶表示器6に順次表示される「演出パターン」の例を示す。リール4L, 4C, 4Rが回転を開始すると同時に、液晶表示器6には、図5に示すような「馬にまたがったカウボーイ」が現れる。

【0042】ここで、リール4L, 4C, 4Rの回転開始直後、液晶表示器6のルーチンパターンを消さずに背景の色彩を変化させて、ゲームの開始を表わす演出をしてもよい。

【0043】また、リール4L, 4C, 4Rの回転開始後、液晶表示器6に演出パターンの表示を開始するまでの所定時間、液晶表示器6には何も画像を表示しないようにしててもよい。この場合、ゲームの開始に際する緊張

感を高めるような演出として有用である。

【0044】その後、図6に示すように、左右のリール4L, 4Rの回転が停止し、表示窓内の表示が左右に特定の入賞圖柄（図6では、“WILD RODEO”圖柄）が揃った状態（リーチ）となった時、液晶表示器6の表示画像は「カウボーイが暴れ馬と格闘している」状態の表示になる。

【0045】その後、図7に示すように、中央のリールが停止した時の表示が特定の入賞圖柄（組合せ）にならない場合には、液晶表示器6の表示画像は「カウボーイが馬から振り落とされた」状態となり、遊技者は入賞を逸する。

【0046】一方、図8に示すように、全てのリールが停止した時の表示が特定の入賞圖柄（図8では、3個の“WILD RODEO”圖柄が揃った状態）になる場合には、液晶表示器6の表示画像は「カウボーイが馬に乗った状態から勝利のポーズをとっている」状態の表示になり、遊技者はその入賞に対応した利益を獲得する。

【0047】上記の演出パターンが液晶表示器6の画面に動画として表示されることにより、遊技者は、カウボーイが暴れ馬から振り落とされないことが入賞につながると感じる。そのため、全てのリールが停止するまで、遊技者は、液晶表示器6の画面を見て、カウボーイが暴れ馬から振り落とされないと願い、最後にカウボーイが振り落とされてしまうと、入賞を逸した感じる。こうして、遊技者は、液晶表示器6の画面に現れる演出パターンと自分の遊技結果に対する期待とを合わせて緊張しながら遊技を行うので、従来の遊技の单调さが解消される。

【0048】また、図4～図8に示すように、液晶表示器6は中央のリール4Cの下に設けられている。従って、図6に示すように、左右のリール4L, 4Rの回転が停止し、表示窓内の表示が左右に特定の入賞圖柄である“WILD RODEO”圖柄が揃った状態（リーチ）となった後、遊技者は、すでに左右の停止回転を認識しているので、可変表示が継続している中央のリール4Cの表示だけを注目すればよく、目線を左右に移すことなく、その下にある液晶表示器6の表示画像を同時に見ることができる。これにより、遊技者の遊技の終了までの集中力を減らすことがなく、目線の動きも微少で済むので、疲労は増大しない。更に、表示窓内の表示に注目する遊技者にとって、上方に目線を移すよりも、下方に目線を移すほうが容易なことから、表示画像の注意を引きやすい。更に、遊技者は、リーチ時には、カウボーイが暴れ馬から振り落とされないと願いながら液晶表示器6の画面を見守りつつ中央のリール4Cの表示に注目し、その後に中央のリール4Cが停止した時には、中央のリール4Cと、その下に位置する液晶表示器6から、表示窓の表示する遊技結果と該遊技結果に対応した画像が同時に視界に飛び込んでくるので、表示窓の遊技

結果と液晶表示器6の表示画像の対応関係あるいは一体感を演出することができる。

【0049】また、リールの回転が停止した後、サービスゲーム或いはボーナスゲームとして、遊技者にメダルの投入又は消費を必要としない遊技の機会を与える場合、そのような遊技の開始を知らせる予兆として、図4に示すような画像を液晶表示器6の画面に表示し、これに続く動画を当該遊技の終了まで表示するようにしてもよい。このような予兆表示をすると、遊技者は、液晶表示器6の表示画像でサービスゲーム或いはボーナスゲームの開始を予想し、得をした気持ちになる。

【0050】上記実施例は、表示手段として液晶表示器を備えているが、液晶表示器の代わりにCRTのような映像表示装置、LEDなどの点表示器を多數配列した電気的表示装置、或いは回転リール構造のうえに複数の絵の中の任意の絵で停止して表示する機械的表示装置によっても、上記実施例の表示画像と同様の機械的表示を行なうことができる。また、遊技者にとって順調な遊技状態又は危険な状態を認識させる表示画像を、文字とかわい以外の抽象的な表示（例えば、ランプの点滅）で実現してもよい。

【0051】また、上記実施例では、液晶表示器6に、本来の遊技の結果に対応した可変表示の制御状態を表示させるようとしているが、液晶表示器6での遊技ができる画像を表示するようにしててもよい。その場合、マイコン2のROM22に、別遊技のための表示画像のデータと実行プログラムが格納される。そして、CPU2は、図4及び図10に示す処理を実行する。

【0052】図9において、初めに遊技機の電源がオンになると（ST21）、制御手段としてのCPUは、液晶表示器6に「ルーチンパターン」を表示させる（ST22）。ここで遊技者が所定の操作をすると、すなわち、メダル投入口7にメダルを投入し、1-BETスイッチ9又は最大BETスイッチ10を操作した後、スタートレバーペース又はスピニングスイッチ8を操作すると、リール4L, 4C, 4Rが回転して可変表示を開始する（ST23）。この時、乱数サンプリングにより抽出した乱数に基づいて入賞／非入賞の判定を行う（ST24）。そして「入賞リクエスト信号」が発生したかどうかを判定し（ST25）、その判定結果に応じて入賞又は非入賞の表示態様を決定する点は、図3の処理と同様である。

【0053】しかし、図9の処理では、液晶表示器6の表示画像は、別遊技として複数のゲームを実行できるパターンである。すなわち、CPUは、上記ST25の判定で「入賞リクエスト信号」が発生していないければ、「ゲーム1」用のパターンを選択し（ST26）、「入賞リクエスト信号」が発生したときは、「入賞リクエスト信号」が「大当たり」に該当するか否かを判定し（ST27）、「NO」であれば「ゲーム2」用のパターンを

選択し (ST 28) 、「YES」であれば「ゲーム3」用のパターンを選択する (ST 29)。「ゲーム1」、「ゲーム2」及び「ゲーム3」としては、表示部6に現れる絵柄は同じであるが入賞確率が異なるゲーム、或いは現れる絵柄も入賞確率も異なるゲームなど、それぞれ異なるものが予め設定される。

【0054】次に、上記のように選択されたゲームを開始する条件が整ったか否かを判定する (ST 30)。開始条件としては、例えば、1本のリールの停止、2本のリールの停止、全リールの停止、所定時間経過など、任意のものを予め定めておく。開始条件が「全リールの停止」以外の場合、液晶表示器6の画面によるゲームはリールの回転中に開始されることになり、本来の遊技と液晶表示器6での別遊技が同時に行われることになる。

【0055】上記判定で開始条件が整ったときは、図10に示すように、選択されたゲーム用のパターンを液晶表示器6の画面に表示するための処理を行なう (ST 31)。それによるゲームを実行させる。そして、このゲームの入賞判定を行う (ST 32)。この入賞判定は、本来の遊技と同様に乱数サンプリングによる入賞か非入賞かの判定及び入賞の種類の判定で、これが、このゲームのために特別の入賞判定を用意してもよい。

【0056】入賞と判定されたときは、入賞処理を行う (ST 33)。これは、液晶表示器6に特定の入賞態様を表示するほか、前記のようにリール4 L, 4 C, 4 Rの特定回柄が入賞ライン1 4に揃ったときの処理と同じか或いはそれとは別個に定められた処理のいずれでもよい。一方、非入賞と判定された場合には、非入賞処理を行う (ST 34)。すなわち、液晶表示器6に特定の非入賞態様を表示する。その後、回転中のリール4 L, 4 C, 4 Rについて停止制御を行なう (ST 35)、終了する。

【0057】図11は、リール4 L, 4 C, 4 Rによる遊技と関連して液晶表示器6で行われる別遊技の表示画像の例を示す。この例では、液晶表示器6の画面に、本来の遊技の可変表示を行う3つのリール4 L, 4 C, 4 Rと同様に複数種類の回柄の可変表示を行う3つの移動シンボル列6 L, 6 C, 6 Rの画像が表示される。

【0058】この例の別遊技は、リール4 L, 4 C, 4 Rの回転が停止した時に入賞ライン1 4に沿って並んだ回柄が特定の入賞態様で揃った時に開始される「ボーナスゲーム」の場合である。この時、遊技者には、その入賞の態様に対応して予め定められた利益として所定枚数のメダルが払い出される。そして、「ボーナスゲーム」の開始により、液晶表示器6の画面に3つのシンボル列6 L, 6 C, 6 Rが可変表示され、所定時間経過した時点で各シンボル列6 L, 6 C, 6 Rの移動が停止する。この時、中央ライン1 4' 上に特定のシンボル「DOLLAR」が位置すると、遊技者には再度、所定枚数のメダルが払い出される。従って、遊技者には、「ボーナスゲー

ム」により、本来の遊技の入賞で獲得する利益が倍になる機会が与えられる。

【0059】また、別遊技の他の例として、リール4 L, 4 C, 4 Rの回転が停止した時に入賞ライン1 4に沿って並んだ回柄が特定の入賞態様で揃った時に開始される「抽選ゲーム」の場合で、その入賞態様に対応して利益配当を予め定めておかず、上記の「ボーナスゲーム」同時に液晶表示器6の画面に可変表示する3つのシンボル列6 L, 6 C, 6 Rの停止した時の中央ライン1 4' 上に位置するシンボル（数字）が利益配当を表わし、その決定した利益配当により所定枚数のメダルが払い出される。

【0060】以上とのおり、本発明における表示手段の一例の液晶表示器6には、本来の遊技の可変表示制御状態の表示或いは別遊技のための表示画像が表示されるが、これらの表示のほかに、過去の遊技結果の履歴、すなわち既に発生された遊技における入賞やハズレの発生回数もしくは発生率を示す画像を表示してもよい。このため、図1のスロットマシンの正面の適当な場所（例えば、液晶表示器6の横幅）に表示切替ボタンを設け、遊技中の任意の時点で、遊技者がこれを押すと、液晶表示器6の画面は、入賞やハズレの発生回数もしくは発生率の表示に切り替わり、遊技者が再度ボタンを押すと、前の画面に復帰するようにする。上記の履歴表示により、遊技者は、遊技を始めようとする遊技機が当たりの出やすい台かどうかを判断できる。

【0061】このような遊技履歴を示す画像として、例えば遊技開始直後の入賞又はハズレの残存率（例えば10, 000回のゲームで発生すると想定される入賞又はハズレの回数の%）を、図12及び図13に示すような棒グラフや、図14に示すような円グラフでアナログ表示し、或いは図15に示すような数字でデジタル表示することができる。これらの表示のための演算は、スロットマシン1のマイコン或いは液晶表示器6自体のCPU（ある場合）で行われる。

【0062】詳細には、図12の例では、入賞の回柄組み合せを構成する回柄（シンボル）として“7”，“BAR”，“ペル”（图形），“チエリー”（图形）が示され、これらの回柄と他の回柄（「ハズレ」となるシンボル）について各々の残存率が液晶表示器6の画面に表示されている。各回柄毎の残存率（%）を表す棒グラフは、図13に回柄“7”を例として示すように、スロットマシン1の電源投入時又はリセット時には、点灯又は明るく表示された部分が100%の状態にある（図13A）が、ゲームが繰り返していくうちに、3個の回転リール4 L, 4 C, 4 Rの停止時の回柄組み合わせが“7-7-7”的大当たりとなる状態が生じる毎に10%ずつ、点灯又は明るい部分が減少していく（図13B-D）。また、図14の円グラフでも、各回柄毎の残存率（%）を表す点灯又は強調部分が大当たりの生じる

毎に減少していく。他の図柄についても同様である。図15のディジタル表示では、各図柄毎に残存率(%)を表す数字が変化していく。

【図6】また、表示手段の一例の液晶表示器6の配置が、図1のような表示窓3Cの下側に限らず、例えば図16に示すように表示窓3L, 3C, 3Rの下側全域や、左側の表示窓3Lの下側、或いは右側の表示窓3Rの下側等に設けててもよい。

【図7】また、各表示窓に3個以上の図柄が表示され、複数の入賞ラインが所定の条件下で有効となる可変表示装置を具備する遊技機であってもよい。

【画面の簡単な説明】

【図1】本発明の実施例のスロットマシンの外観を示す斜視図。

【図2】図1のスロットマシンに用いられる回路構成を示すブロック図。

【図3】実施例の制御動作の一部を示すフローチャート。

【図4】実施例の可変表示開始前の表示状態と液晶表示器の表示画像の例を示す図。

【図5】可変表示開始後の表示状態と液晶表示器の表示画像を示す図。

【図6】可変表示がリーチ状態を表示し、その時の液晶表示器の表示画像を示す図。

【図7】可変表示が停止して“ハズレ”となる図柄を表示し、その時の液晶表示器の表示画像を示す図。

【図8】可変表示が停止して“大当たり”となる図柄を表示し、その時の液晶表示器の表示画像を示す図。

【図9】実施例の液晶表示器に別遊技の表示を行う場合

の処理手順を示すフローチャート。

【図10】図9に続くフローチャート。

【図11】実施例の液晶表示器で行われる別遊技の表示画像の例を示す図。

【図12】実施例の液晶表示器で各図柄の残存率を棒グラフで表示している状態を示す図。

【図13】図12の1つの図柄について棒グラフ表示の変化的例を示す図。

【図14】1つの図柄の残存率を円グラフで表示した場合を示す図。

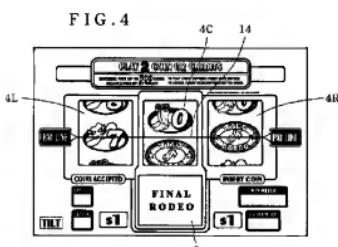
【図15】実施例の液晶表示器で各図柄の残存率を数字で表示している状態を示す図。

【図16】本発明の別の実施例のスロットマシンの外観を示す斜視図。

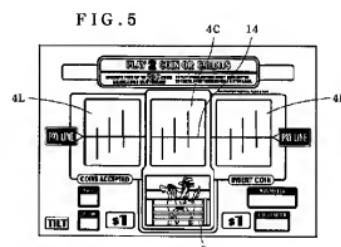
【符号の説明】

1…スロットマシン、2…キャビネット、3L, 3C, 3R…表示窓、4L, 4C, 4R…リール、5…スタートレバー、6…液晶表示器、7…メダル投入口、8…スピンドルスイッチ、9…1-BETスイッチ9、10…最大BETスイッチ、11…C/Pスイッチ、12…メダル払い出口、13…メダル受け部、14…入賞ライン、15L, 15C, 15R…ステッピングモータ、16…液晶駆動回路、20…マイコン、21…CPU、22…ROM、23…RAM、24…クロックパルス発生回路、25…分周器、26…乱数発生器、27…乱数サンプリング回路、30…ホッパー、31…モーター駆動回路、32…ホッパー駆動回路、34…リール位置検出回路、35…メダル検出部、36…払出し完了信号回路。

【図4】

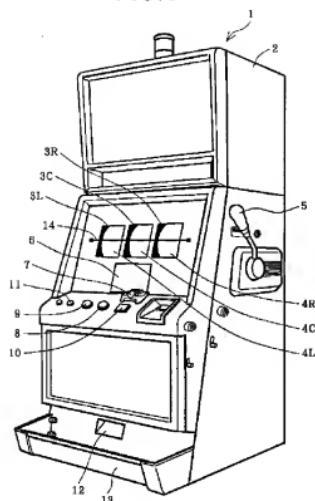


【図5】



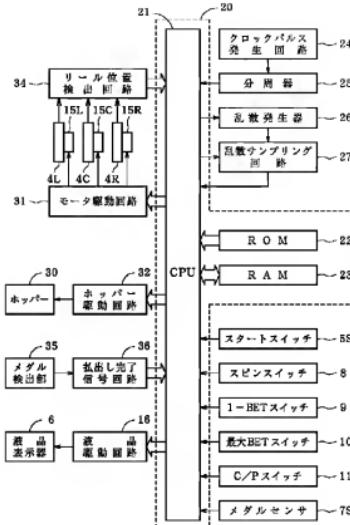
【図1】

FIG. 1



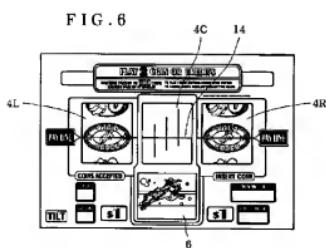
【図2】

FIG. 2



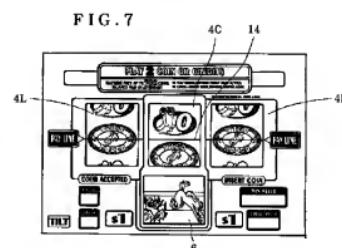
【図6】

FIG. 6



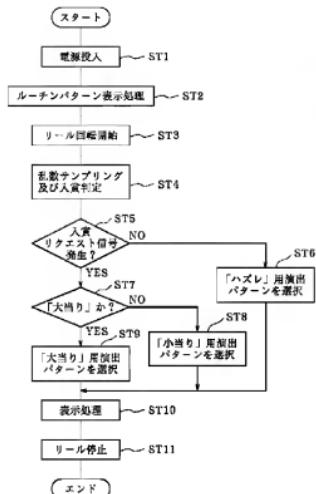
【図7】

FIG. 7



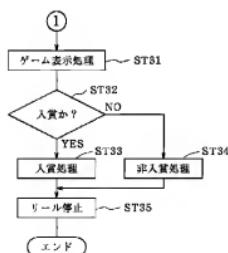
【図3】

FIG. 3



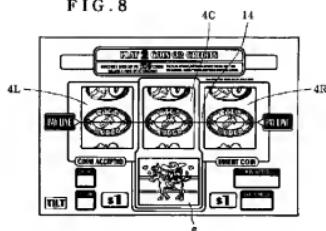
【図10】

FIG. 10



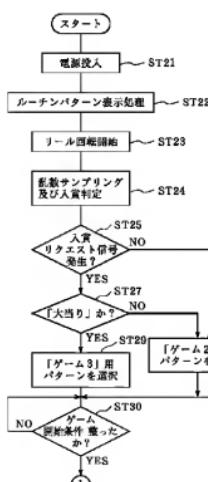
【図8】

FIG. 8



【図9】

FIG. 9



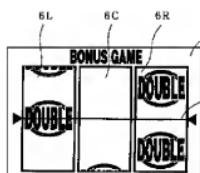
【図14】

FIG. 14



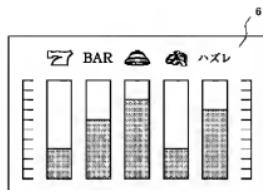
【図11】

FIG.11



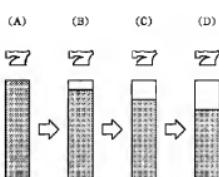
【図12】

FIG.12



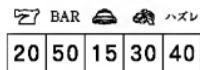
【図13】

FIG.13



【図15】

FIG.15



【図16】

FIG.16

